NOVA SCOTIA
Department of Health

Reportable Diseases in Nova Scotia

Surveillance Report
2001 - 2002

104-04737/

Erratum: Please note these changes

Page 36 Section IV Sexually Transmitted and Blood-Borne Pathogens
"The number of reported cases of AIDS in Nova Scotia continued to increase subsequent to 1992, peaking at 37 cases in **1994** then continued to decline to 2002".

Appendices, Table 2b
The cumulative number of AIDS cases for males in Nova Scotia to December 31, 2002 = **253**.

Reportable Diseases in Nova Scotia

Surveillance Report
2001 - 2002

Reportable Diseases in Nova Scotia Surveillance Report 2001 – 2002

Prepared by: Office of the Provincial Medical Officer of Health
Nova Scotia Department of Health
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Section I

Introduction

Section I Introduction

Surveillance has been defined by the US Centers for Disease Control (CDC) as "the ongoing, systematic collection, analysis and interpretation of health data essential to the planning, implementation and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know."[1] In Canada, surveillance of communicable diseases is supported by provincial legislation that mandates the reporting or notifying of diseases by laboratories and physicians. The list of such diseases differs by province/territory and disease-specific case definitions have been developed nationally that provide standardized criteria for reporting those diseases under national surveillance at the Centre for Infectious Disease Prevention and Control at Health Canada. This facilitates comparability across jurisdictions.[2]

In Nova Scotia, the Health Act and the Regulations of the Act govern the reporting of communicable diseases. Notifiable communicable diseases are listed and the responsibilities of physicians and laboratories in the timely reporting of these diseases are delineated. The method of reporting is determined by the urgency of reporting the disease.[3]

This report reviews the communicable disease data collected over an 11-year period in Nova Scotia through a series of charts and tables. For diseases that have been made reportable more recently, data is summarized for the period 1997-2002 only. Diseases are grouped according to the national surveillance categories: Enteric, Food and Waterborne Diseases; Diseases Transmitted by Direct Contact and Respiratory Routes; Sexually Transmitted and Bloodborne Pathogens; Vectorborne and Other Zoonotic Diseases; Diseases Preventable by Routine Vaccination; and Other Diseases.

Methodology

Unless otherwise indicated, all incidence rates are crude rates based on the census population of Nova Scotia in 1991 (census data supplied by Performance, Measurement, and Health Informatics, NS Department of Health). Currently, Nova Scotia is composed of nine District Health Authorities (DHAs). Many of the DHAs have shared service agreements resulting in four groupings of Districts that Public Health Services refer to as the regions of Western, Capital, Northern and Eastern. Geographic comparisons are made on this regional basis. Rates calculated for selected enteric, sexually transmitted and blood-borne diseases for these regions in 2002 have been age-standardized to the age distribution of the 1991 census population for Canada. Cases for which age was not specified were not included in this calculation and these numbers have been noted. For selected diseases, age-specific incidence and distribution of cases by month of diagnosis are also presented. Ages have been grouped by five-year intervals for those 0 to 29 years of age, by ten-year intervals for those 30 to 59 years of age, and a single grouping has been designated for those 60 years of age and older.

Limitations

Crude Incidence Rates:

The scales on charts used to depict incidence rates in this report vary with the disease presented. Although trends may appear to show great variability, often very low rates of disease have been graphically presented and this should be noted as such.

Out-of-Province Testing:

Individuals who may reside in Nova Scotia but have previously tested positive outside of the province will not be reported here and therefore do not appear in Nova Scotia provincial statistics. Cases are attributed to the province where the initial positive diagnosis was made.

HIV Testing:

The number of positive HIV test reports describes those who have been tested and given a diagnosis of HIV infection but is not representative of the total number of persons living with HIV (i.e. prevalence) or the number of newly infected individuals (i.e. incidence).[4]

Section II

Enteric, Food and Waterborne Diseases

Amoebiasis

Amoebiasis, also known as amoebic dysentery, is a parasitic infection of the intestine. It is caused by a protozoan that occurs as an infective cyst and a fragile but potentially pathogenic trophozoite. Transmission of the disease is through the consumption of amoebic cysts in fecally contaminated food or water or may be transmitted sexually by oral-anal contact.[5]

The incidence of amoebiasis in Nova Scotia since 1992, although showing some slight variation, has been relatively stable (Figure 1a). In 2002, cases were distributed equally between males and females and 63% of cases were diagnosed in individuals greater than 30 years of age. Rates in those 1 to 4 years and 40 to 59 years of age were two cases per 100,000 population (Figure 1b). Half of all cases in 2002 were diagnosed in July and August (Figure 1c).

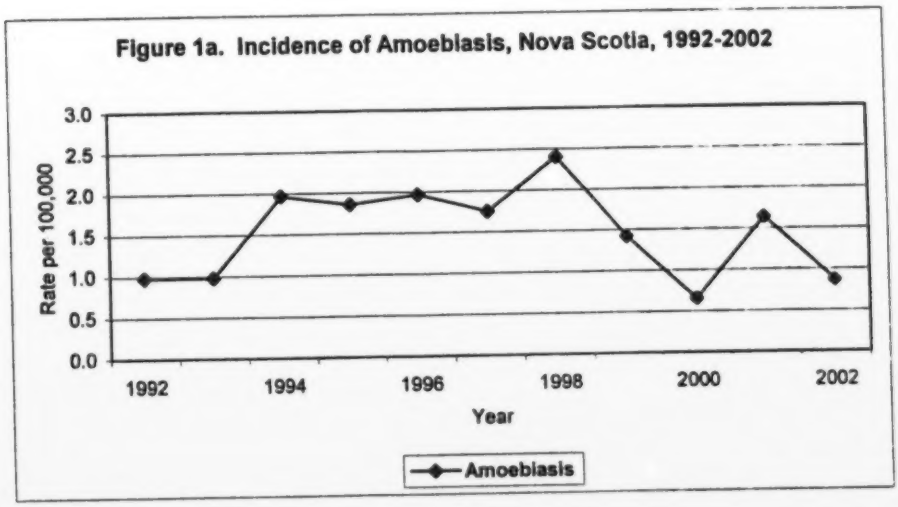


Figure 1b. Age-Specific Incidence of Amoebiasis, Nova Scotia, 2002

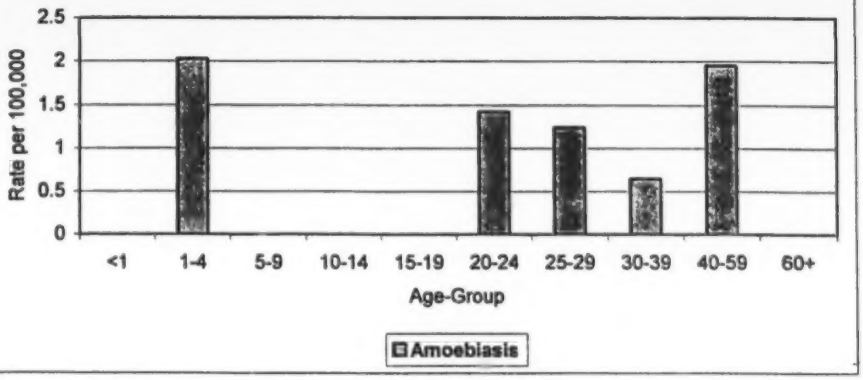
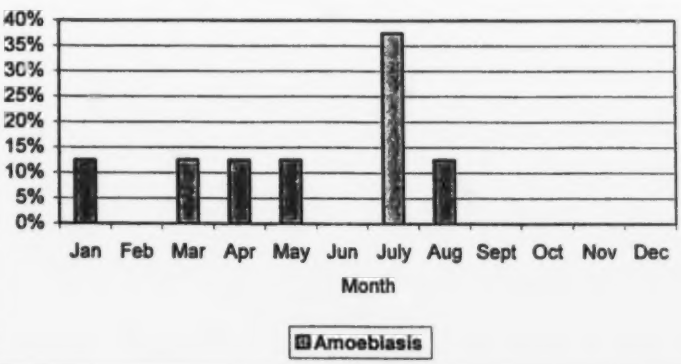


Figure 1c. Percentage of Reported New Cases of Amoebiasis, Nova Scotia, by Month, 2002



Campylobacteriosis

Campylobacteriosis is an acute zoonotic bacterial disease that affects the digestive system. The disease varies in severity and is characterized by diarrhea, abdominal pain, malaise, fever, nausea and vomiting. Infection occurs through the consumption of undercooked chicken or pork, contaminated food, water or raw milk and may also be acquired through close contact with infected infants. Infected puppies, kittens or farm animals may also be a source of the disease.[5]

The crude incidence of campylobacteriosis in Nova Scotia has shown a decreasing trend over the last decade, peaking at 36.4 cases per 100,000 population in 1993 (Figure 2a). In 2002, 86% of cases were diagnosed in individuals >20 years of age and 58% of cases occurred in males. Incidence peaked in the 20-24 year age group at 33 cases per 100,00 population (Figure 2b). 61% of cases occurring in 2002 were diagnosed in the five-month period from May to September (Figure 2c) and DHAs 1, 2 and 3 (Western) had the highest age-standardized incidence of 32 cases per 100,000 population (Figure 2d).

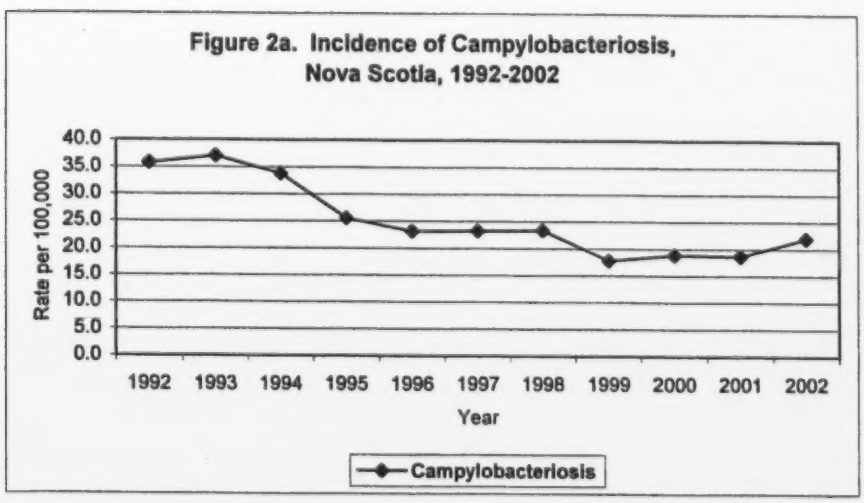


Figure 2b. Age-Specific Incidence of Campylobacteriosis, Nova Scotia, 2002

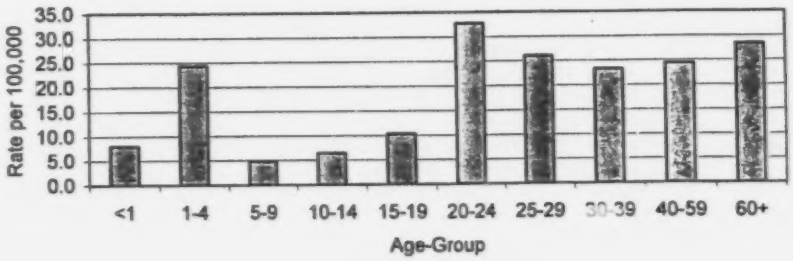


Figure 2c. Percentage of Reported New Cases of Campylobacteriosis, Nova Scotia, by Month, 2002

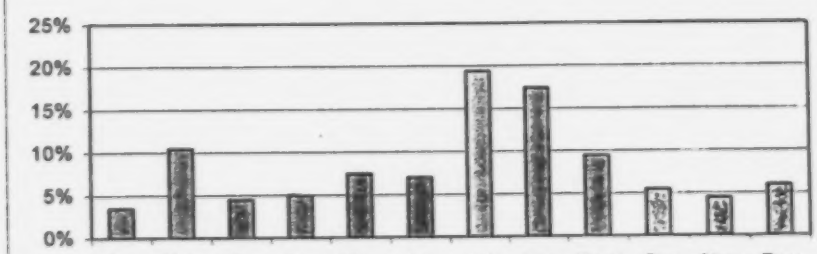
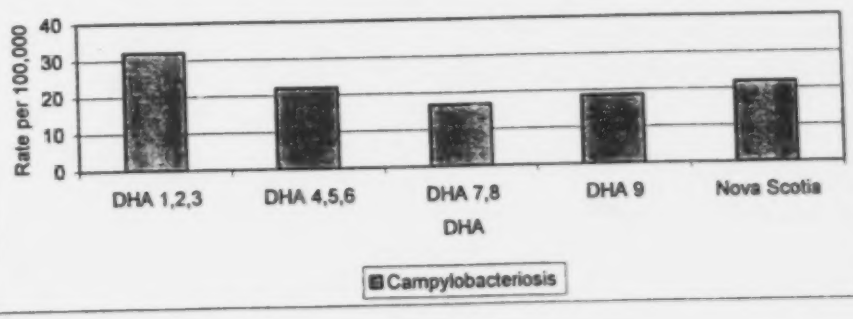


Figure 2d. Age-Standardized Incidence of Campylobacteriosis, Nova Scotia, by District Health Authority, 2002

(rates standardized to age distribution of the 1991 census population of Canada; one case age not specified and not included in calculation)

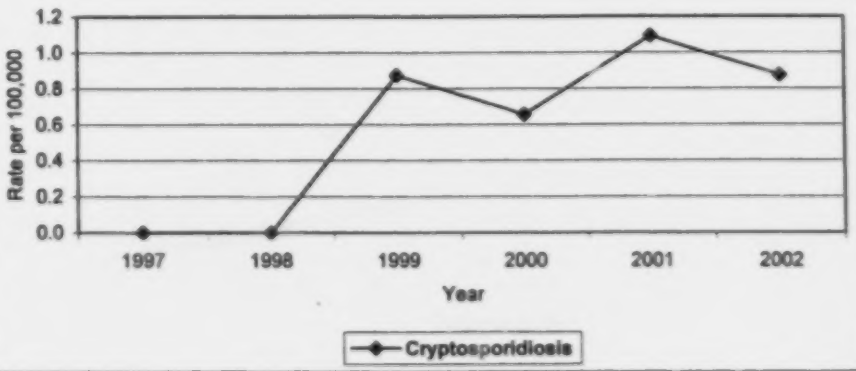


Cryptosporidiosis

Cryptosporidiosis is a parasitic infection affecting humans and more than 45 vertebrate species including poultry, birds, fish, reptiles, small and large mammals. *Cryptosporidium parvum* is associated with human infection, affecting the epithelial cells of the gastrointestinal, biliary or respiratory tracts. The disease is transmitted via the fecal-oral route and may be waterborne, foodborne, passed from person-to-person or from animal-to-person.[5]

Incidence of cryptosporidiosis infection in Nova Scotia has remained very low over the last five years with an average annual incidence of less than one case per 100,000 population (Figure 3).

Figure 3. Incidence of Cryptosporidiosis, Nova Scotia, 1997-2002

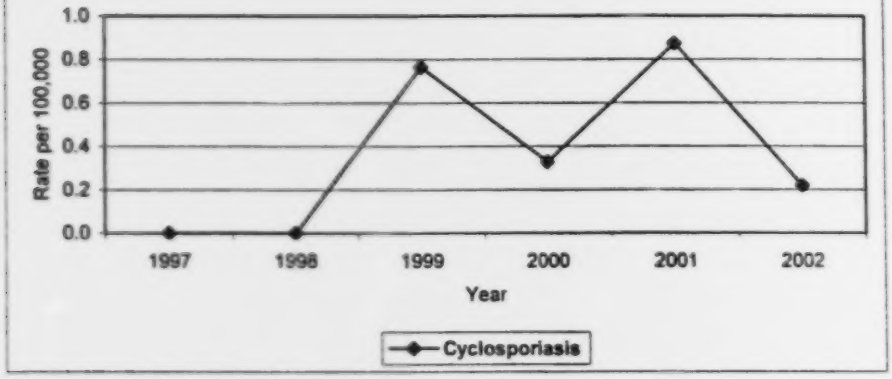


Cyclosporiasis

Cyclospora cayetanensis is a coccidian protozoan responsible for diarrheal disease. Water appears to be the main vehicle of transmission, but international outbreaks have been traced to raspberries. Basil and lettuce have also been implicated. Outbreaks are seasonal with reported cases predominating in the warmer months.[5]

Incidence of cyclosporiasis has been consistently low in Nova Scotia over the past five years at less than one case per 100,000 population (Figure 4).

Figure 4. Incidence of Cyclosporiasis, Nova Scotia, 1997-2002



Giardiasis

Giardiasis is a protozoan infection, primarily of the upper small intestine. Transmission is person-to-person with the primary mode of spread probably related to hand-to-mouth transfer of cysts from the feces of infected persons (particularly in institutions and daycare centres). Ingestion of cysts in fecally contaminated water and more rarely food, may lead to localized outbreaks.[5]

The incidence of giardiasis has decreased slightly over the last decade with the exception of 1996 when incidence peaked (Figure 5a). In 2002, cases were distributed almost equally between males and females at 57% and 43% respectively. Approximately 69% of all reported cases were diagnosed in individuals 30+ years of age and the highest age-specific incidence was in those 40-59 years of age (Figure 5b). Thirty percent of cases were diagnosed between July and September (Figure 5c) and DHA9 (Capital) had the highest age-standardized incidence of 19.3 cases per 100,000 population (Figure 5d).

Figure 5a. Incidence of Giardiasis, Nova Scotia, 1992-2002

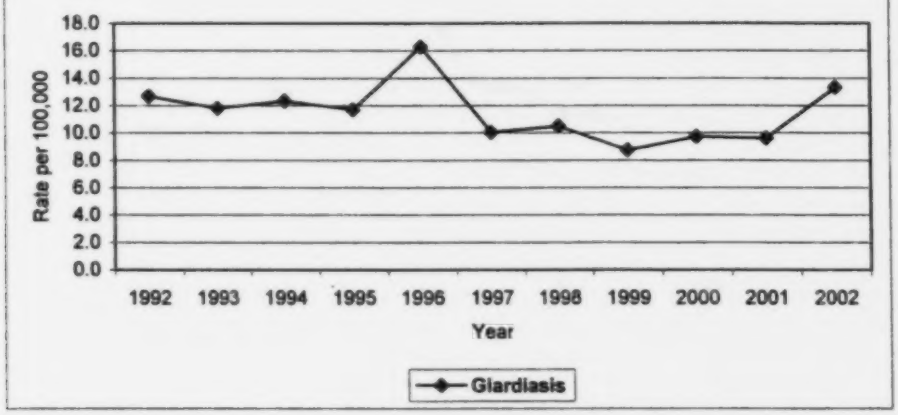


Figure 5b. Age-Specific Incidence of Giardiasis, Nova Scotia, 2002

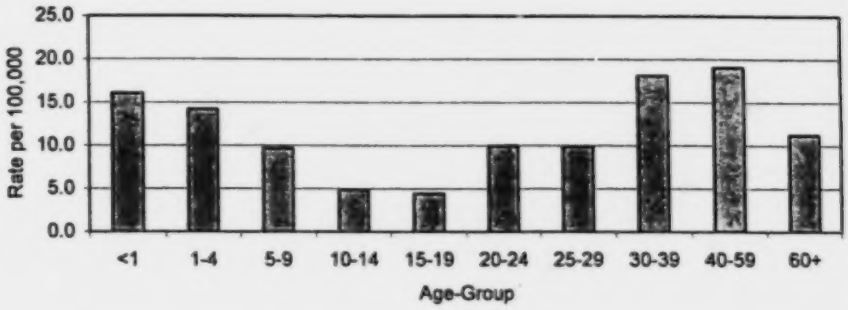


Figure 5c. Percentage of Reported New Cases of Giardiasis, Nova Scotia, by Month, 2002

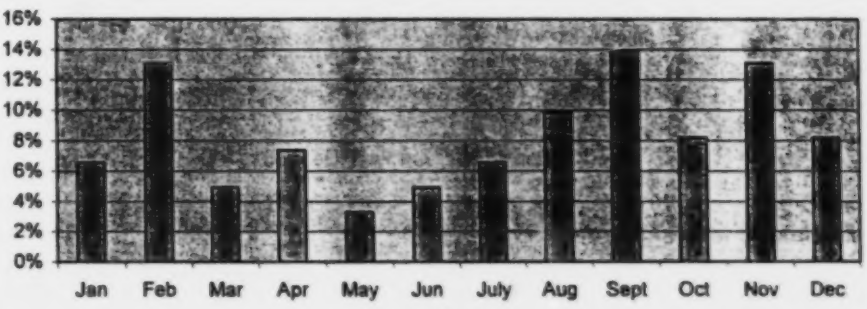
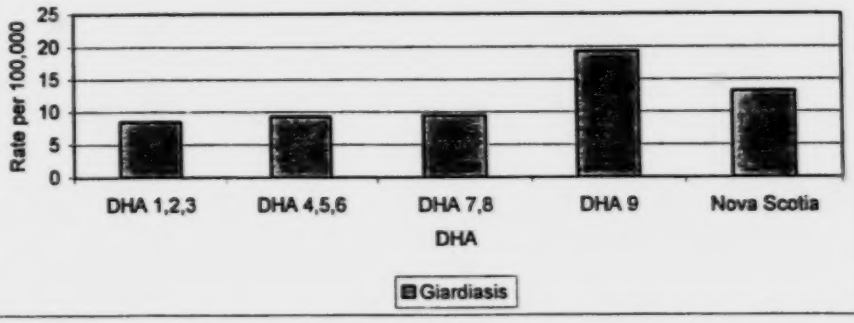


Figure 5d. Age-Standardized Incidence of Giardiasis, Nova Scotia by District Health Authority, 2002

(rates standardized to age distribution of 1991 census population of Canada; 2 cases age not specified and not included in calculation)

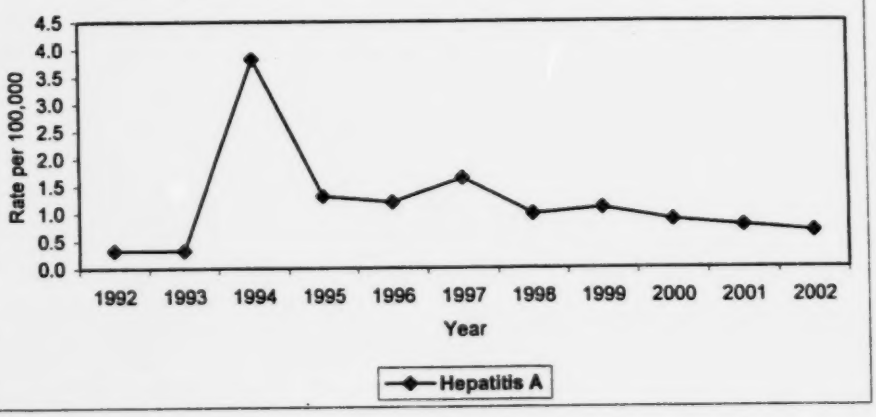


Hepatitis A

Hepatitis A Virus (HAV) is an infection of the liver caused by a picornavirus. Transmission is person to person via the fecal-oral route and common source outbreaks have been related to contaminated water and food through infected food handlers or from contaminated molluscs and produce.[5]

The incidence of HAV in Nova Scotia has remained relatively stable over the last ten years with the exception of 1994 when incidence peaked at 3.8 cases per 100,000 population (Figure 6). In 2002, all reported cases were in females.

Figure 6. Incidence of Hepatitis A, Nova Scotia, 1992-2002



Salmonellosis

Salmonellosis is an enteric infection of bacterial origin. Numerous serotypes of *Salmonella* are pathogenic for animals and humans and vary in prevalence from country to country. In most areas, only a few serotypes account for most of the confirmed cases. The disease is transmitted by the ingestion of food derived from infected animals or through the fecal contamination of food from an animal or person with the disease. Potential sources of infection include raw and undercooked eggs and egg products, raw milk and raw milk products, contaminated water, meat and meat products, poultry and poultry products as well as reptiles and chicks. Raw fruits and vegetables may also be implicated if contamination occurs when the produce is sliced.[5]

The incidence of salmonellosis in Nova Scotia has remained relatively stable over the last decade, with an average annual incidence of 16.8 cases per 100,000 population (Figure 7a). In 2002, 65% of cases occurred in those 20 years of age and older and cases were almost equally distributed between males and females, 47% versus 53 % respectively. Age-specific incidence was greatest in the 1-4 year old age group (Figure 7b). The greatest proportion of cases was reported in June, 2002 (Figure 7c) and the highest age-standardardized incidence occurred in DHA9 (Capital) (Figure 7d).

Figure 7a. Incidence of Salmonellosis, Nova Scotia, 1992-2002

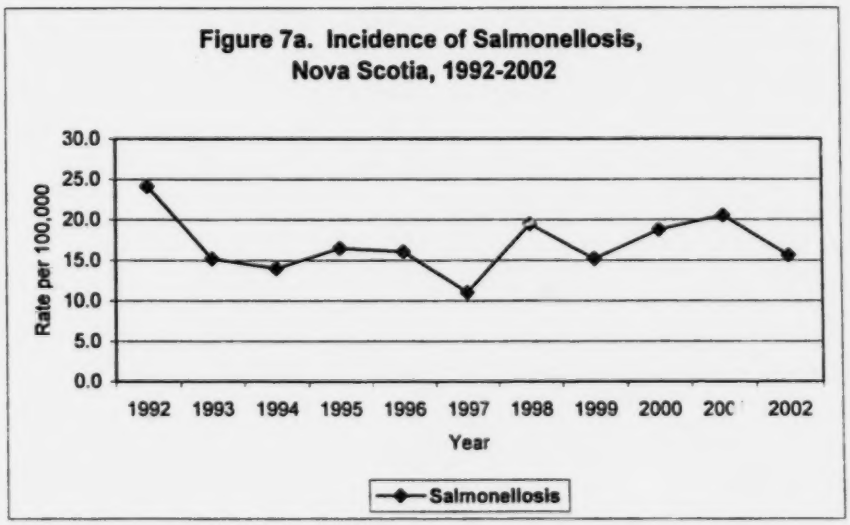


Figure 7b. Age-Specific Incidence of Salmonellosis, Nova Scotia, 2002

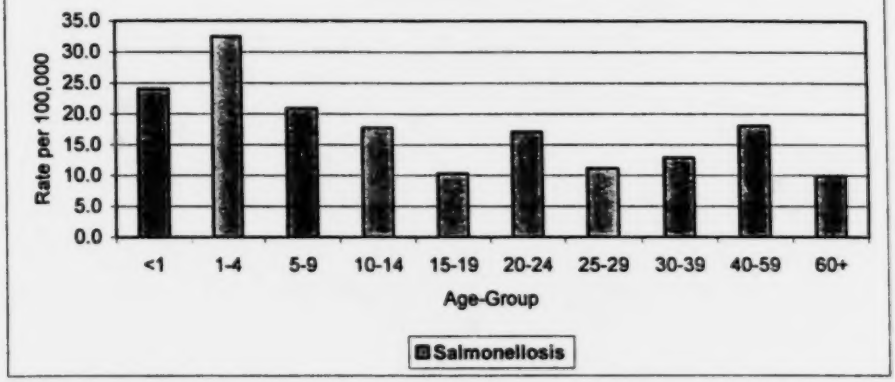


Figure 7c. Percentage of Reported New Cases of Salmonellosis, Nova Scotia, by Month, 2002

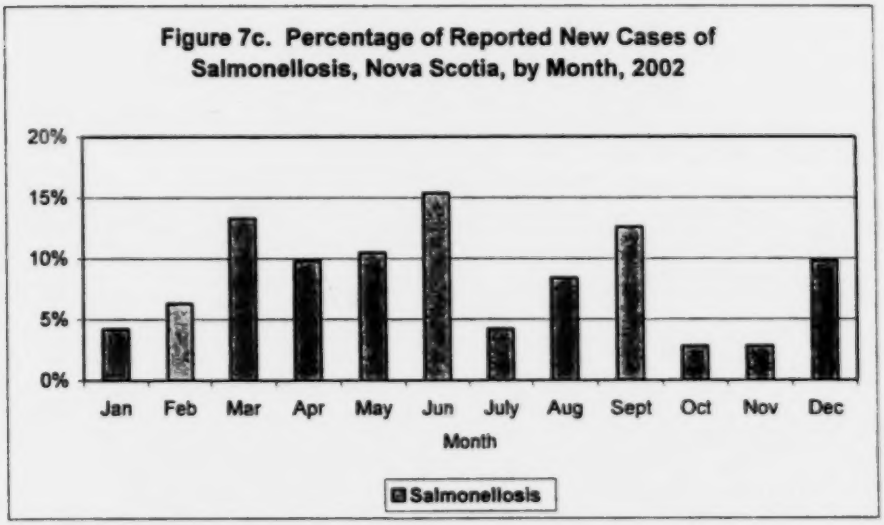
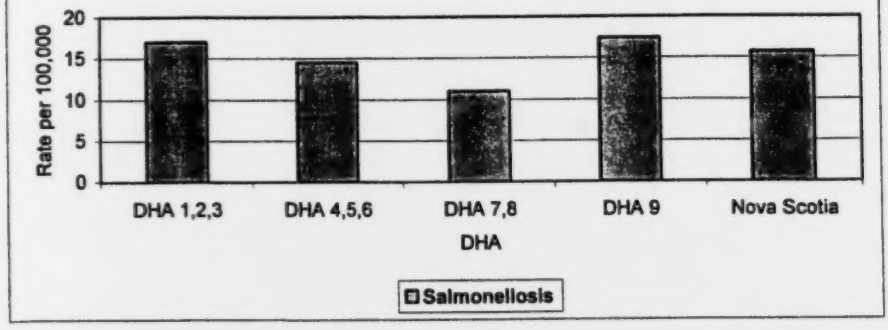


Figure 7d. Age-Standardized Incidence of Salmonellosis, Nova Scotia, by District Health Authority, 2002
(rates standardized to age distribution of 1991 census population of Canada)

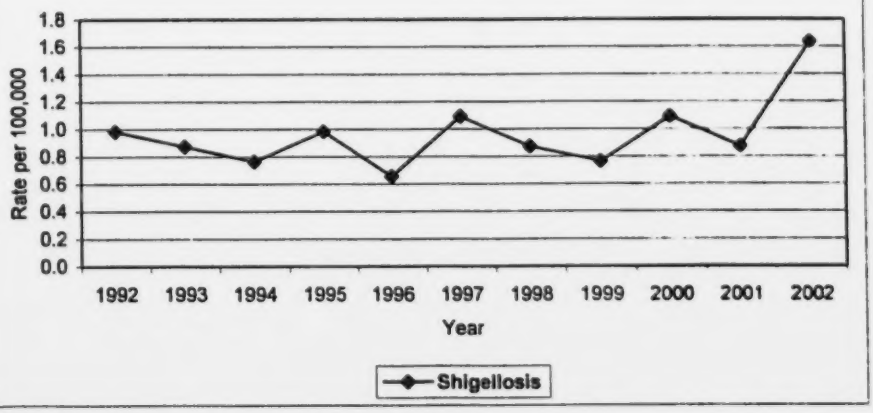


Shigellosis

Shigellosis is an acute bacterial intestinal disease caused by four species or serogroups of the genus *Shigella*. Transmission is direct or indirect from a symptomatic individual or from a short-term asymptomatic carrier via the fecal oral route. Transmission may also occur through direct fecal contamination of water and milk and through flies that may contaminate uncovered food.[5]

The incidence of shigellosis in Nova Scotia has remained consistently low over the past ten years at less than one case per 100,000 population with the exception of 2002 when incidence reached 1.6 cases per 100,000 population (Figure 8). In 2002, 73% of the reported cases were diagnosed in females and 87% of cases were reported for those 20 years of age and older.

Figure 8. Incidence of Shigellosis, Nova Scotia, 1992-2002



Verotoxigenic *E. coli*

Infection with Verotoxigenic/Shigatoxigenic E.coli (VTEC/STEC) may lead to hemorrhagic colitis and potentially the more severe Hemolytic Uremic Syndrome (HUS), a serious complication of the infection. A common serotype in North America is 0157:H7. Transmission may be through water but commonly the infection is transmitted through contaminated food. Inadequately cooked beef (particularly ground beef), raw milk and fruits or vegetables that have been contaminated with feces from ruminants, are commonly responsible. The bacteria may also be passed person-to-person through direct contact in families, childcare centres, and institutions.[5]

The occurrence of new cases of verotoxigenic *E. coli* in Nova Scotia has remained relatively stable over the last ten years with the exception of 1998 when incidence peaked at 7.9 cases per 100,000 population (Figure 9a). In 2002, 61% of reported cases were diagnosed in females and 26% of cases were diagnosed in children <20 years of age. The highest age-specific incidence occurred in those 20-24 years of age at 5.7 cases per 100,000 population (Figure 9b). Sixty-one percent of cases were reported in August and September (Figure 9c) and the highest age-standardized incidence was in DHA9 (Capital) at 3.1 cases per 100,000 population (Figure 9d).

Figure 9a. Incidence of Verotoxigenic *E.coli*, Nova Scotia, 1992-2002

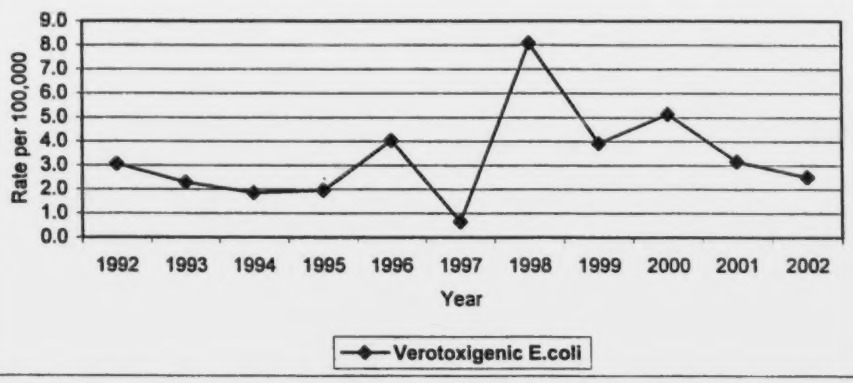


Figure 9b. Age-Specific Incidence of Verotoxigenic *E. coli*, Nova Scotia, 2002

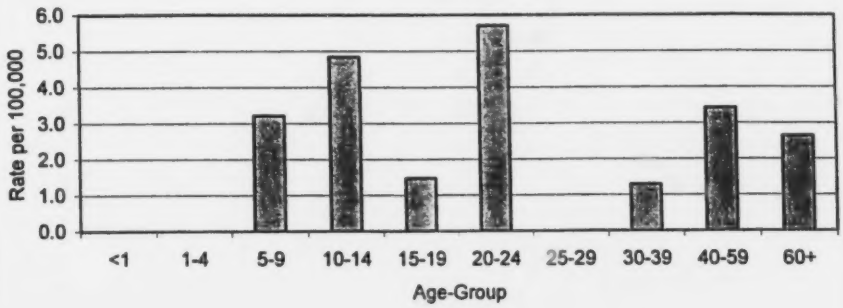


Figure 9c. Percentage of Reported New Cases of Verotoxigenic *E. coli*, Nova Scotia, by Month, 2002

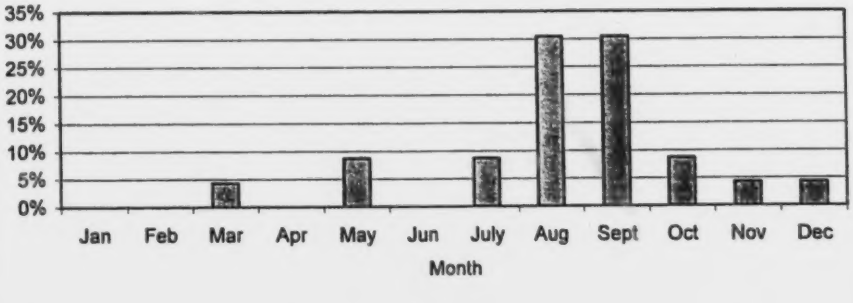
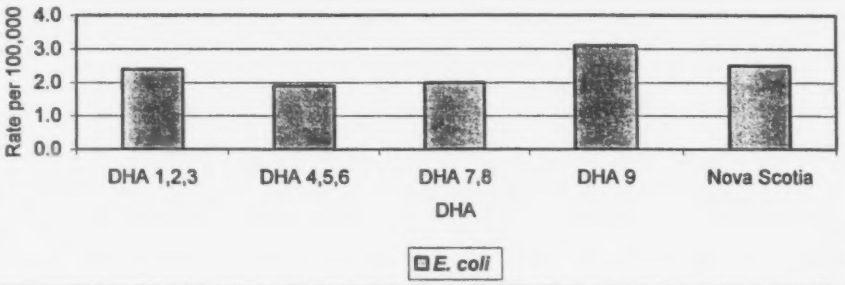


Figure 9d. Age-Standardized Incidence of Verotoxigenic *E. coli*, Nova Scotia, by District Health Authority, 2002
(rates standardized to age distribution of 1991 census population of Canada)

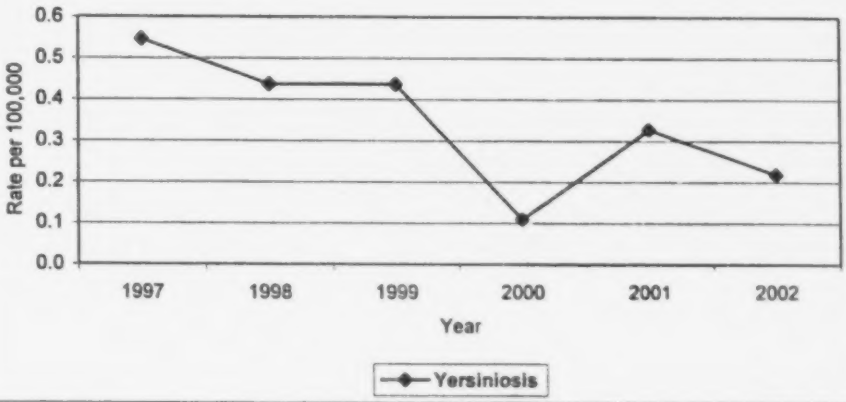


Yersiniosis

Yersiniosis is an acute enteric disease of bacterial origin. *Yersinia enterocolitica* or *Yersinia pseudotuberculosis* can both cause clinical illness but *Y. enterocolitica* is responsible for most reported cases. Transmission is via the fecal-oral route through consumption of contaminated food and water or by contact with infected humans and animals. Pathogenic strains of *Y. enterocolitica* have been most commonly isolated from raw pork or pork products.[5]

The incidence of yersiniosis in Nova Scotia has been very low over the past five years at less than one case per 100,000 population (Figure 10).

Figure 10. Incidence of Yersiniosis, Nova Scotia, 1997-2002



Enteric Outbreaks in Nova Scotia, 1998 – 2001

Between 1998 and 2001, 56 enteric outbreaks were reported in Nova Scotia affecting 2,033 people. Outbreaks occurred in one of three settings: community, long-term care facilities or restaurants/licensed establishments. Community settings included such places as church halls, fire halls and events run by volunteer organizations. Fifteen of the 56 enteric outbreaks (27%), affecting 685 people (34%), occurred in the community setting.

Of particular note is the type of organism involved in these outbreaks. In three of the 15 community outbreaks, *E. coli* 0157:H7 was lab-confirmed as the enteric pathogen and *Salmonella* was lab-confirmed in one community outbreak. Food service in the community setting accounts for nearly one-third of all enteric outbreaks in the province and these outbreaks can involve particularly virulent organisms.

Section III

Diseases Transmitted by Direct Contact and Respiratory Routes

Laboratory-Confirmed Influenza

By the end of May 2002, a total of 106 laboratory-confirmed cases of influenza had been diagnosed in Nova Scotia during the 2001-2002 influenza season. The first laboratory-confirmed case was Influenza A and occurred on January 13, 2002. There were only four cases of laboratory confirmed Influenza B during the entire season, with the first occurring on January 21, 2002 (Table 1). The previous flu season (2000-01) showed a predominance of Influenza B; 28 type A cases were confirmed versus 151 type B. Overall, among the lab-confirmed cases there were 62 females (58%) and 44 males (42%). The ages ranged from 2 months to 95 years. The mean age of lab confirmed cases was 49.5 years. As can be seen in Figure 11a, influenza-like illness (ILI) rates vary considerably within and between flu seasons. Note that there were two peaks in the ILI rates in the 2001-02 seasons versus one large peak in the 2000-01 season. Figure 11b shows that pneumonia and influenza mortality also shows high variability within and between seasons.

Table 1 Laboratory-Confirmed Influenza Cases in Nova Scotia, October 2001 – May 2002

Region	Influenza A	Influenza B	Total Laboratory Confirmed Cases	
			Number	%
DHAs 1,2,3	25	1	26	25
DHAs 4,5,6	17	0	17	16
DHAs 7,8	42	3	45	42
DHA 9	18	0	18	17
Total	102	4	106	100

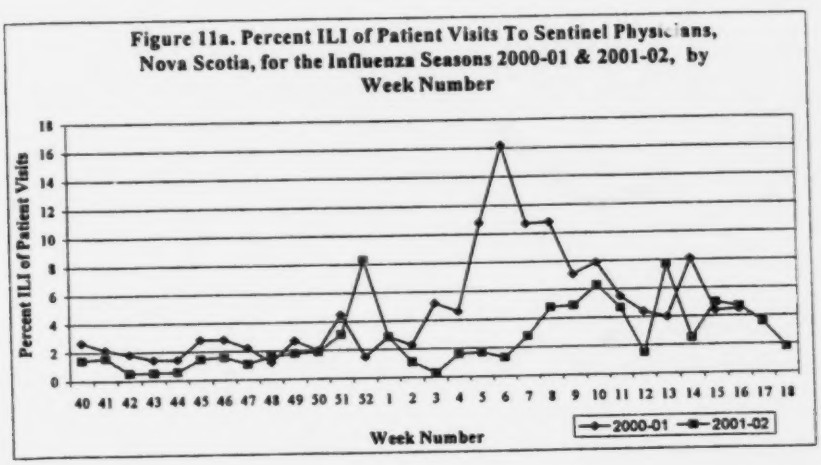


Figure 11a. Percent ILI of Patient Visits To Sentinel Physicians, Nova Scotia, for the Influenza Seasons 2000-01 & 2001-02, by Week Number
Percent ILI of Patient Visits
0
2
4
6
8
10
12
14
16
18
40 41 42 43 44 45 46 47 48 49 50 51 52 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
Week Number
2000-01
2001-02

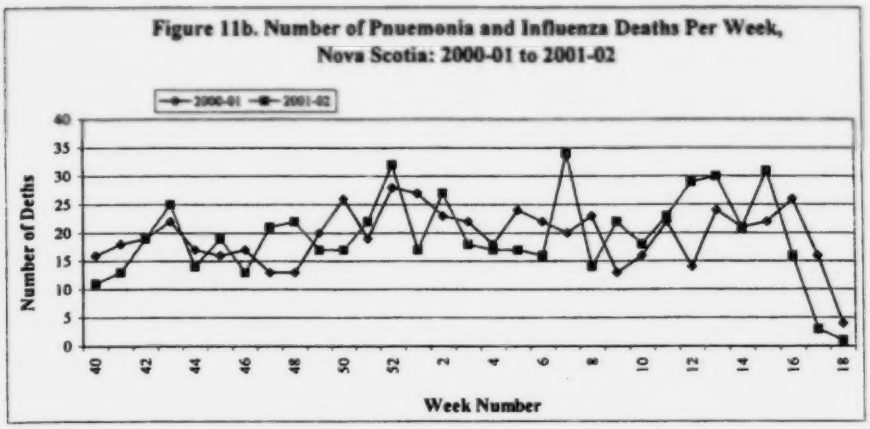


Figure 11b. Number of Pneumonia and Influenza Deaths Per Week, Nova Scotia: 2000-01 to 2001-02

Influenza Immunization

Nova Scotia's influenza immunization program shows consistent increase in vaccine up-take in both the high-risk groups and the general population. As seen in Table 2, over the past few years the percentage of people over 65 years of age who are immunized has increased from 58% to 65%. For those Nova Scotians under age 65 a similar trend is noted in Table 3, with a steady increase in those immunized from 7.6 % to 13%.

Among those in long-term care facilities (Table 4), the percentage immunized has also shown an encouraging trend upward and the immunization rates remain high, exceeding the program goal of 90% immunization in the past two years.

Table 2 Influenza Immunization Coverage for Nova Scotia Residents Age 65+ Years

Year	Total Immunized		Total Population* 65+ Years
	Number	%	
2001-2002	82,352	65	127,268
2000-2001	74,612	62	119,866
1999-2000	73,940	63	117,358
1998-1999	67,600	58	116,637

* Based on the mid-year population projection from 1996 Census, for the lower year (e.g. 2001)

Table 3 Influenza Immunization Coverage for Nova Scotia Residents < 65 Years			
Year	Total Immunized		Total Population < 65 Years.
	Number	%	
2001-2002	103,684	13	811,217
2000-2001	80,622	10	806,118
1999-2000	69,130	8.6	805,328
1998-1999	61,513	7.6	805,028

Table 4 Influenza Immunization Rate for Residents of Long Term Care Facilities in Nova Scotia			
Year	Total Immunized		Total Long Term Care Population
	Number	%	
2001-2002	6638	93	7164
2000-2001	6121	91	6711
1999-2000	5329	90	5901

Respiratory Outbreak Summary, Nova Scotia, 1997 – 2001

Between 1997 and 2001, there were a total of 80 respiratory outbreaks reported in Nova Scotia, affecting 1,940 people. Forty-one of these were lab-confirmed; 33 as Influenza A and 7 as Influenza B.

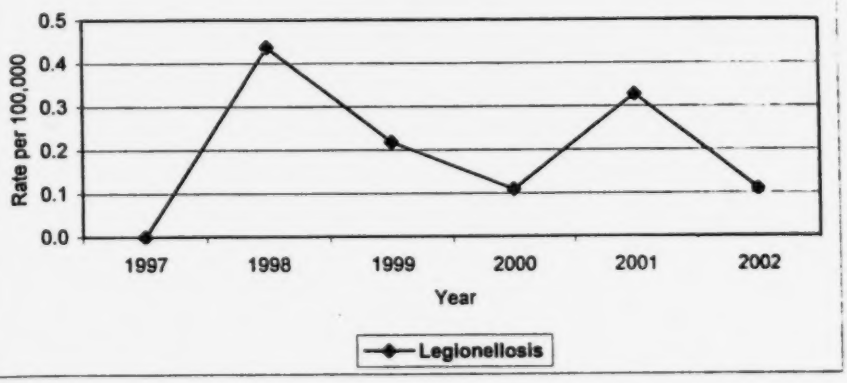
All of these outbreaks occurred in long-term care facilities. Every region was represented over the five-year period; however, some regions reported no outbreaks in some years. Typically, the Eastern and Western regions report the most respiratory outbreaks in any given year.

Legionellosis

Legionellosis is an acute disease caused by the gram-negative bacilli *Legionellae* that may lead to pneumonia or death. Water is probably the primary reservoir and epidemiologically, hot water systems (showers), cooling towers for air conditioning systems, evaporative condensers, humidifiers, whirlpool spas, equipment used in respiratory therapy, and decorative fountains have been implicated. Airborne transmission has been supported by epidemiologic evidence but the bacteria may also be transmitted by aspiration of water.[5]

The incidence of legionellosis in Nova Scotia has been extremely low with less than one new case per 100,000 population reported annually between 1998 and 2002 (Figure 12). All reported cases in 2001 were in the 30 to 59 year age group. Only one case was reported in 2002.

Figure 12. Incidence of Legionellosis, Nova Scotia, 1997-2002



Invasive Meningococcal Disease

Invasive meningococcal disease (IMD) is an acute bacterial disease caused by the meningococcus, *Neisseria meningitidis*. The disease is spread by direct contact and droplet infection from the nose and throat of infected individuals. The prevalence of those who carry the bacteria in the absence of meningitis or invasive disease may be 25% or more but the invasion of bacteria sufficient to cause systemic disease is uncommon. Serogroups A, B, C and Y are responsible for most cases of disease but groups W-135, X and Z have also been recognized as pathogens.[5]

Following an outbreak in 1992, overall incidence of IMD in Nova Scotia has remained consistently low (Figure 13a) and since 1998 has averaged 2 cases per 100,000 population annually in those less than 20 years of age. The highest age-specific incidence of laboratory-confirmed cases in 2002 in Nova Scotia occurred in children less than one year of age (Figure 13b). As incidence has been shown to be highest among young children and to decline with increasing age, immunization programs generally focus on those less than 20 years of age. Laboratory-confirmed IMD, serogroup C had an incidence of 2.2 cases per 100,000 population during the outbreak in 1992, but no laboratory-confirmed cases of serogroup C were reported between 1997 and 2001 (Figure 13c).

Figure 13a. Incidence of Laboratory-Confirmed Invasive Meningococcal Disease, Nova Scotia, 1992-2002

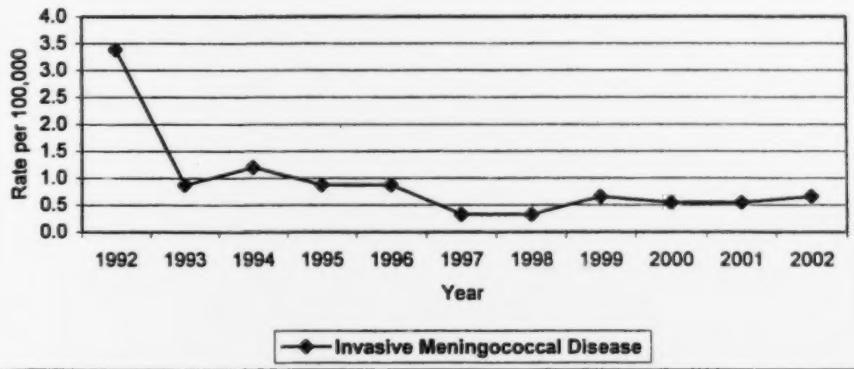


Figure 13b. Age-Specific Incidence of Laboratory-Confirmed Invasive Meningococcal Disease, Nova Scotia, 2002

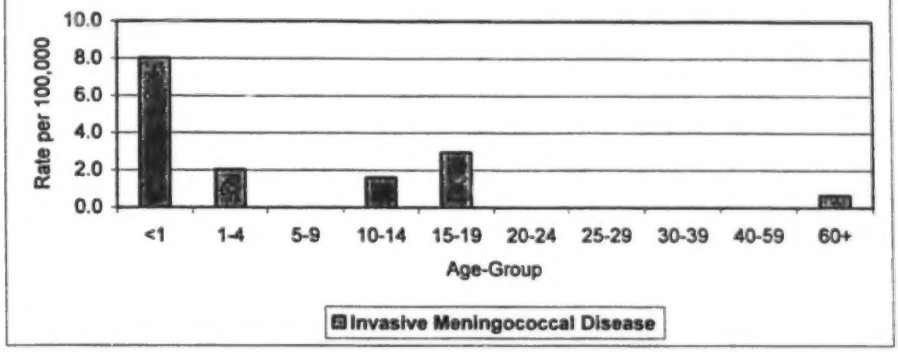
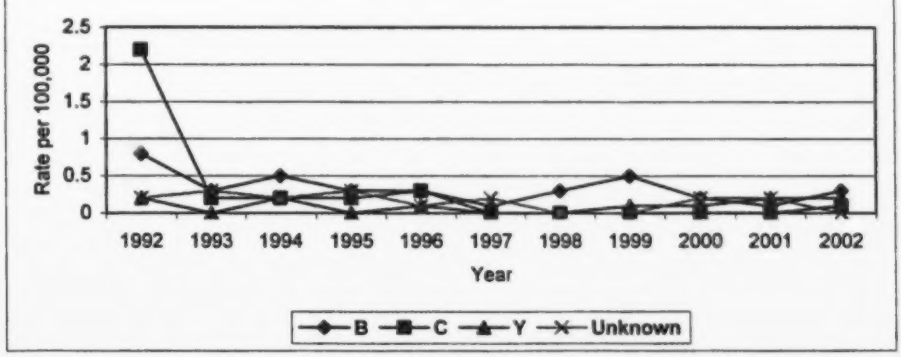


Figure 13c. Incidence of Laboratory-Confirmed Invasive Meningococcal Disease, Nova Scotia, by Serogroup, 1992-2002

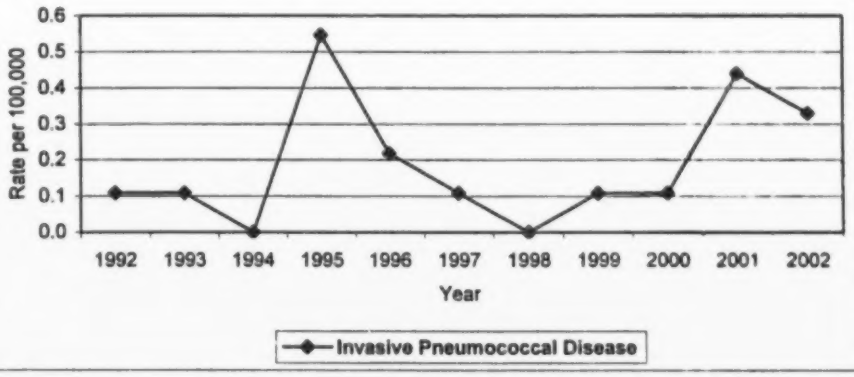


Invasive Pneumococcal Disease

Invasive pneumococcal disease is an acute bacterial disease caused by *Streptococcus pneumoniae* (pneumococcus). It is the leading cause of invasive bacterial infections, meningitis, bacterial pneumonia and acute otitis media in children. Invasive disease is most commonly diagnosed in the very young, the elderly and those groups at high risk of disease (functional or anatomic asplenia, congenital or acquired immune deficiency including AIDS).[6] The infection is transmitted by droplet spread, direct oral contact or through indirect contact with articles freshly contaminated with respiratory discharges. Pneumococcal vaccine is available for infants and the elderly.

The incidence of invasive pneumococcal disease in Nova Scotia remained low between 1992 and 2002 with an average annual incidence of less than one case per 100,000 population (Figure 14).

Figure 14. Incidence of Invasive Pneumococcal Disease, Nova Scotia, 1992-2002

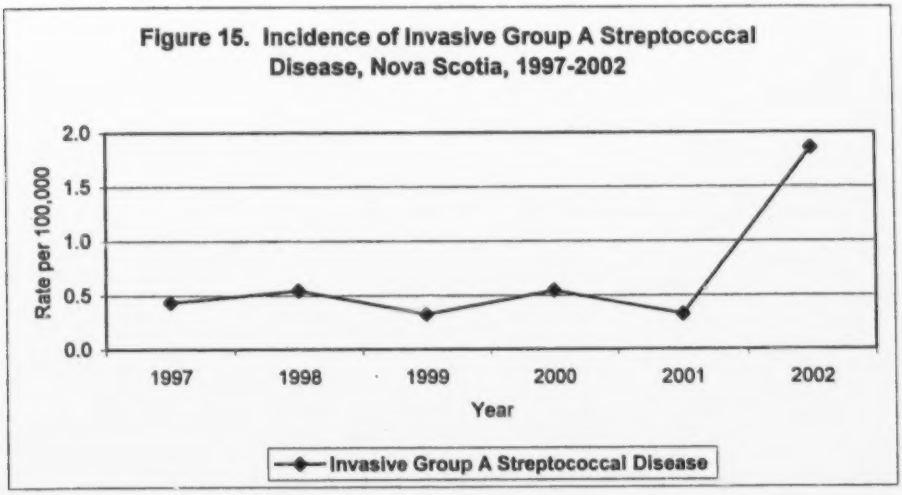


Invasive Group A Streptococcal Disease

There are approximately 80 serologically distinct types of *Streptococcus pyogenes*, group A streptococci. A variety of diseases are caused by these bacteria but streptococcal sore throat and skin infections are the most commonly encountered. Other diseases include scarlet fever, puerperal fever, septicemia, erysipelas, cellulitis, mastoiditis, otitis media, pneumonia, peritonsillitis and wound infections. Rarely, infection may lead to necrotizing fasciitis, rheumatic fever and a toxic shock-like syndrome. Transmission is through large respiratory droplets or direct contact with patients or individuals who are carriers of the bacteria.[5]

Incidence of invasive Group A streptococcal disease between 1997 and 2001 was very low in Nova Scotia with an average annual rate of less than one case per 100,000 population (Figure 15). In 2002, incidence increased to 1.9 cases per 100,000 and 94% of reported cases were diagnosed in those 20 years of age and older.

Figure 15. Incidence of Invasive Group A Streptococcal Disease, Nova Scotia, 1997-2002



Group B Streptococcal Disease of the Newborn

The human sub-types of group B streptococci (*S. agalactiae*) are responsible for two forms of illness in newborn infants. Group B streptococcal disease may have an early onset (one to seven days) and is acquired in utero or during delivery. It is characterized by sepsis, respiratory distress, apnea, shock, pneumonia and meningitis and often occurs in low-birth weight infants. The disease may also have a late onset (seven days to several months) and is characterized by sepsis and meningitis. Late onset disease is acquired by person-to-person contact and occurs in full-term infants. Case fatality for early onset disease is about 50% and approximately 25% for late onset disease.[5]

There were no cases of Group B streptococcal disease of the newborn reported in Nova Scotia between 1998 and 2000, and the incidence in 2001 was less than one case per 100,000 population. No cases were reported in 2002.

Tuberculosis

Tuberculosis is a bacterial disease caused by *Mycobacterium tuberculosis* complex including *M. tuberculosis* and *M. africanum* primarily from humans and *M. bovis* primarily from cattle. Although tuberculosis may affect any organ or tissue, pulmonary tuberculosis is the most common form of the disease. Tubercule bacilli are transmitted in airborne droplet nuclei through coughing, sneezing, etc. by individuals with pulmonary or laryngeal tuberculosis. Exposure to tuberculous cattle can result in bovine tuberculosis.[5]

The incidence of new active and relapsed cases of tuberculosis in Nova Scotia has declined from previous years (Figure 16a). For most years over this time period, the number of cases of respiratory tuberculosis have exceeded the number of non-respiratory cases by 50% or more. In 2002, there were no cases reported in the 0-24 year age group (Figure 16b) and 75% of reported cases were diagnosed in males.

Figure 16a. Incidence of New and Relapsed Cases of Tuberculosis, Nova Scotia, 1992-2002

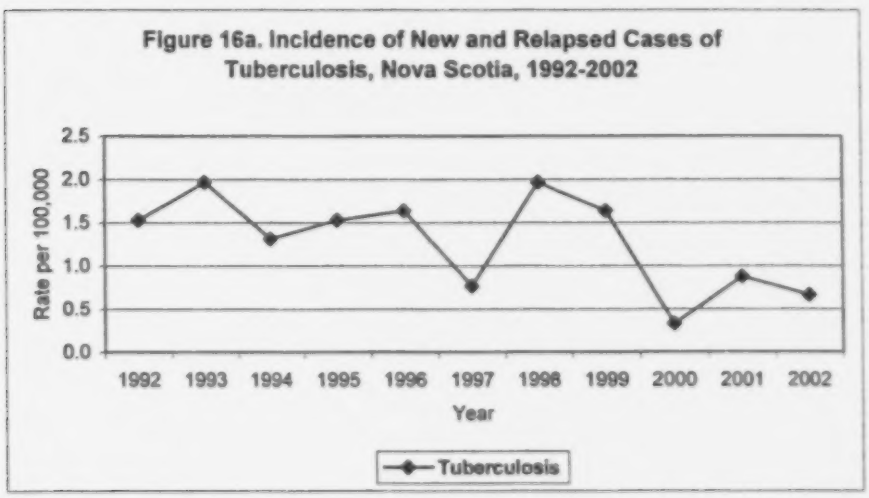
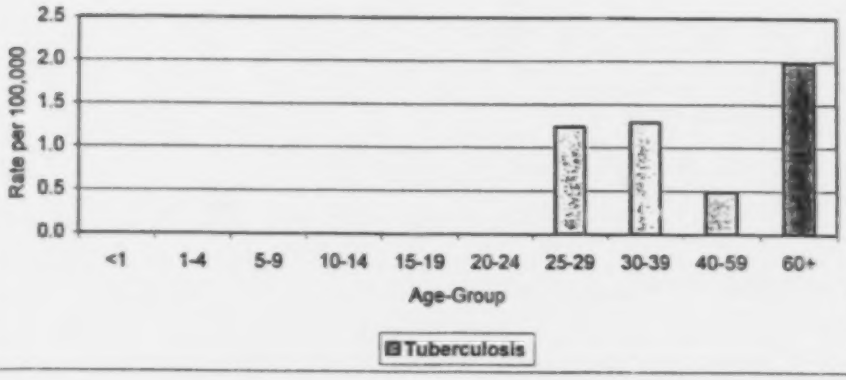


Figure 16b. Age-Specific Incidence of New and Relapsed Cases of Tuberculosis, Nova Scotia, 2002



Section IV

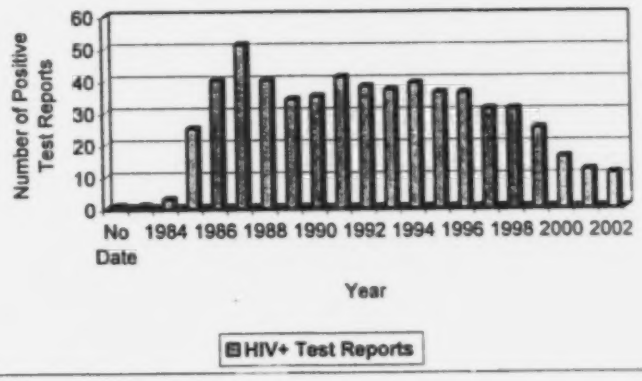
Sexually Transmitted and Bloodborne Pathogens

Human Immunodeficiency Virus (HIV) Infection

Two types of the Human Immunodeficiency Virus (HIV) have been identified: type 1 (HIV-1) and type 2 (HIV-2) but type 2 is less pathogenic. Because this is a precursor to AIDS infection, the modes of transmission reflect those as described for AIDS.

The number of positive HIV test reports describes those who have been tested and given a diagnosis of HIV infection but is not representative of all those living with HIV (e.g. prevalence) or the number of newly infected individuals (e.g. incidence).[4] Between 1992 and 2002, there were 312 new HIV-positive tests reported in Nova Scotia. The highest number was reported in 1994 (39 cases), after which the number has declined steadily (Figure 17). Approximately 14% of the new positive tests reported over this period represent diagnoses in females.

Figure 17. Number of New HIV Positive Test Reports by Year of Diagnosis, Nova Scotia, 1983-2002



Acquired Immunodeficiency Syndrome (AIDS)

AIDS is a disease syndrome representing the late clinical stage of infection with the Human Immunodeficiency Virus (HIV). Person-to-person transmission of the virus, can be through sexual contact, sharing HIV contaminated needles and syringes, transfusion of HIV infected blood or blood components, and transplantation of tissues or organs that have been infected with HIV. Fifteen percent to 30% of infants born to mothers who are HIV positive are infected before, during or soon following birth.[5]

The number of reported cases of AIDS in Nova Scotia continued to increase subsequent to 1992, peaking at 37 cases in 1997 then continued to decline to 2002 (Figure 18a). Since 1983, 87% of reported cases have been in males (Table 2b, Appendix B) and the most common risk group identified over this time period is "men who have sex with men" (Figure 18b).

Figure 18a. Reported Number of New AIDS Cases by Year of Diagnosis, Nova Scotia, to December 31, 2002

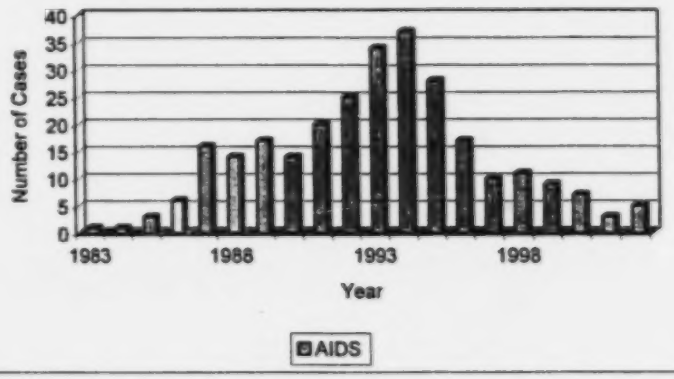
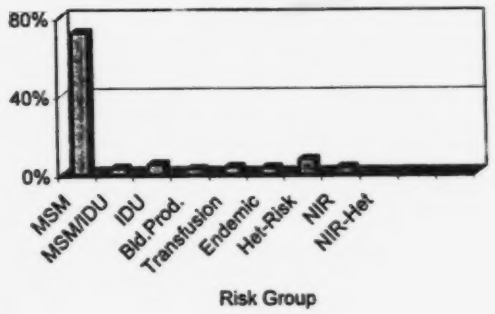


Figure 18b. Percentage of AIDS Cases by Risk Group, Nova Scotia, 1983-2002



See Appendix B for full definitions

MSM: Men who have had sex with men
MSM/IDU: Men who have had sex with men and have injected drugs
IDU: Injecting drug use
Blood Products: Recipient of clotting factor
Transfusion: Transfusion of blood
Endemic: Persons born in pattern II country
Het-Risk: Heterosexual contact with person HIV-infected or at increased risk for HIV infection
NIR: No identified risk
NIR-HET: No identified risk – heterosexual
Other: Mode of HIV transmission known but cannot be classified among major exposure categories

Genital Chlamydial Infection

Chlamydiae cause a number of sexually transmitted infections and eye and lung infections of infants consequent to maternal genital infection. Genital Chlamydial infection is a sexually transmitted disease caused by the bacterium *Chlamydia trachomatis*, manifested in males mainly as a urethitis and in females primarily as a mucopurulent cervicitis.[5]

Although incidence rates for genital *chlamydia* decreased in Nova Scotia between 1992 and 1997, they showed a steady increase to 2002 (Figure 19a). Rates in females far exceeded the rates in males in 2002 in both the 15-19 and 20-24 year age groups (Figure 19b). Further, the greatest proportion of cases in 2002 (71%) were diagnosed in the 15 to 24 year age group and 79% of all reported cases were diagnosed in females. DHA9 (Capital) reported the highest age-standardized incidence of 248 cases per 100,000 population (Figure 19c).

Figure 19a. Incidence of Chlamydial Infection, Nova Scotia, 1992-2002

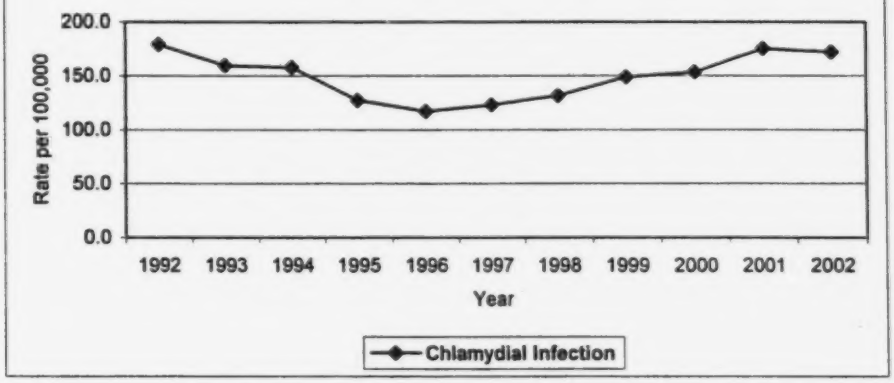


Figure 19b. Age-Specific Incidence of Chlamydial Infection, by Sex, Nova Scotia, 2002

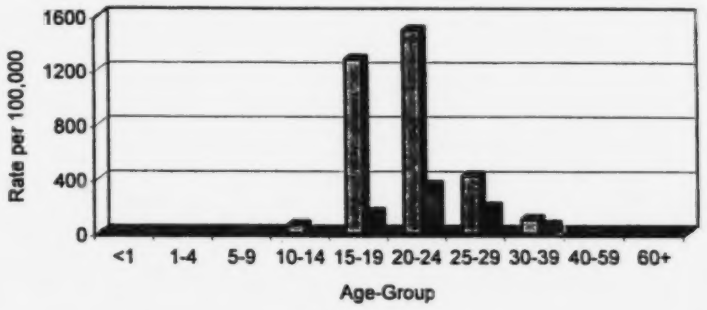
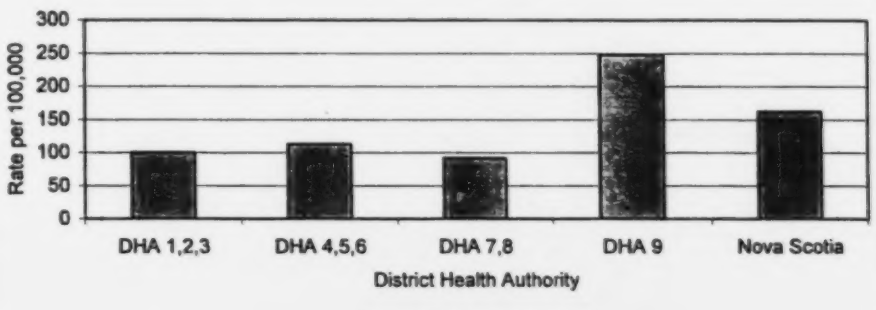


Figure 19c. Age-Standardized Incidence of Chlamydial Infection, Nova Scotia, by District Health Authority, 2002

(rates standardized to age distribution of 1991 census population of Canada; 45 cases age not specified and not included in calculation)



Gonorrhea

Gonorrhea is a sexually transmitted disease caused by the gonococcus *Neisseria gonorrhoea*. It causes genital infections in males and females and can cause conjunctivitis in newborns potentially leading to blindness if not quickly and adequately treated.[5]

In 1992 and 2002, the incidence of gonorrhea in Nova Scotia peaked at 21 cases per 100,000 population, but ranged from 3 to 11 new cases per 100,000 annually over the intervening ten years (Figure 20a). In 2002, 65% of reported cases were individuals 15 to 24 years of age and approximately 54% of cases were diagnosed in females. Incidence in females for both the 15-19 and 20-24 year age-group peaked at 125 cases per 100,000 in 2002 (Figure 20b). DHA9 (Capital) had the highest age-standardized incidence of 45.4 cases per 100,000 population (Figure 20c).

Figure 20a. Incidence of Gonorrhea, Nova Scotia, 1992-2002

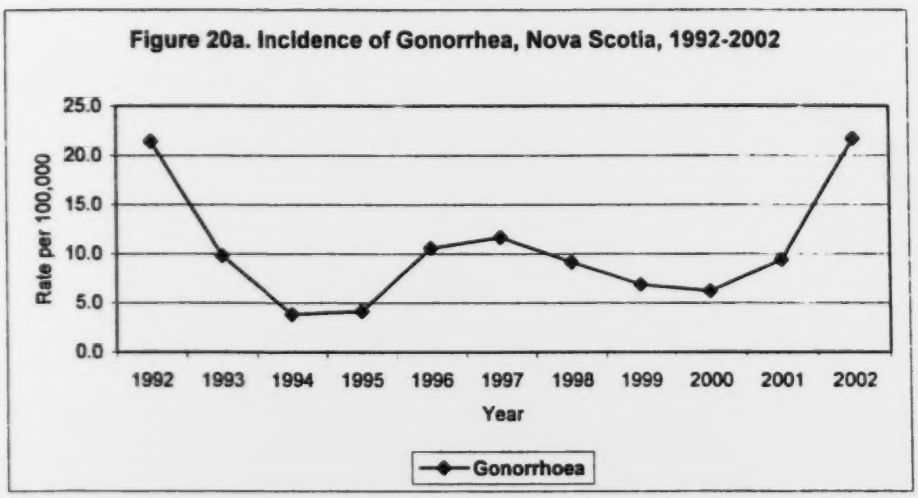


Figure 20b. Age-Specific Incidence of Gonorrhea, Nova Scotia, by Sex, 2002

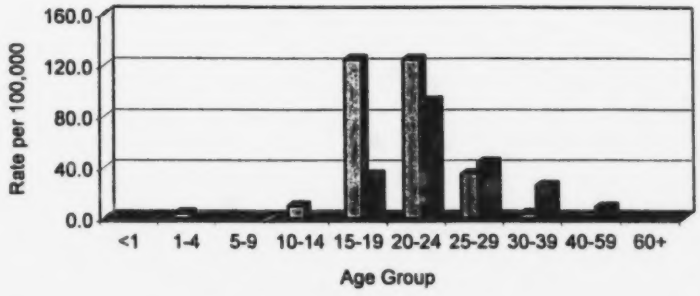
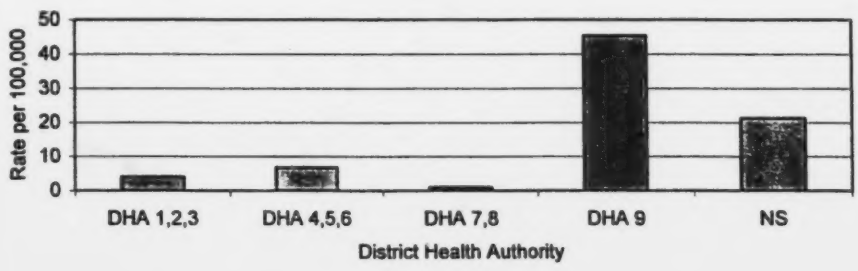


Figure 20c. Age-Standardized Incidence of Gonorrhea, Nova Scotia, by District Health Authority, 2002
(rates standardized to age distribution of 1991 census population of Canada)



Hepatitis C

Hepatitis C is a viral infection caused by the Hepatitis C Virus (HCV). Transmission of HCV is commonly parenteral but sexual transmission has been documented to occur, however, far less efficiently than the parenteral route.[5]

Between 1990 and 2001, 2,629 cases of HCV were reported in Nova Scotia. Incidence rates increased overall between 1992 and 1997 when the rate peaked at 55.3 cases per 100,000 population (32 cases with no year provided). This rapid increase in incidence may reflect the outcome of programs implemented in Nova Scotia to identify, contact and advise the recipients of blood and blood products of their potential risk for disease. Since 1997, incidence has continued to decline to a rate of 20.9 cases per 100,000 in 2001 (Figure 21a). The greatest proportion of cases reported over this 12-year period were diagnosed in males (67%) followed by females (31%) with 2% of unidentified gender. In 2001, age-specific incidence was 52.3 cases per 100,000 in the 40-59 year-old age group (Figure 21b). DHA9 (Capital) had the highest age-standardized incidence of 29 cases per 100,000 population (Figure 21c).

Fifty-nine percent of reported cases during 1990-2001 had follow-up risk factor information provided. Of these 1,545 cases, injection drug use (IDU) was identified as a risk factor in 56%, receipt of tattoos in 34%, blood transfusion in 31% and sharing needles was reported as a risk factor in 28% of cases.

Figure 21a. Incidence of Hepatitis C, Nova Scotia, 1992-2001

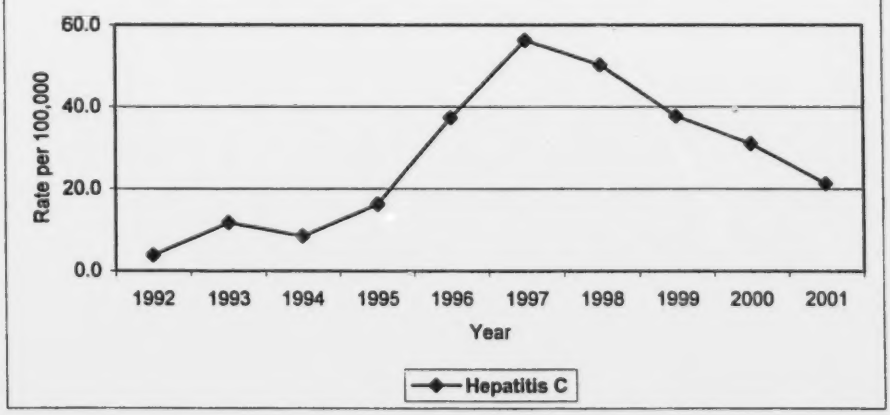


Figure 21b. Age-Specific Incidence of Hepatitis C, Nova Scotia, 2001

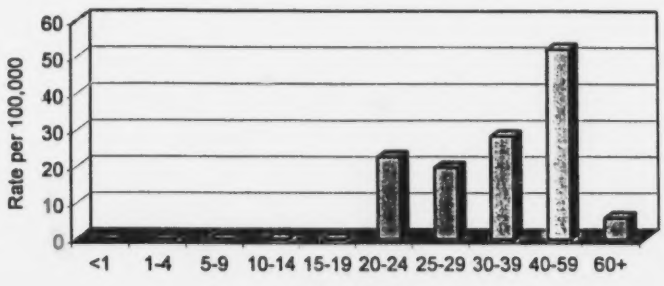
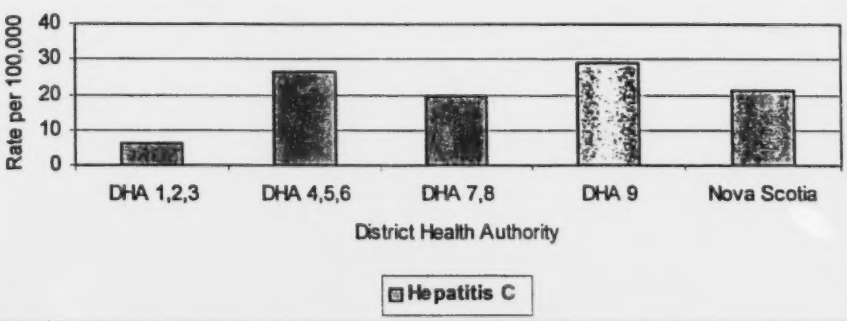


Figure 21c. Age-Standardized Incidence of Hepatitis C, Nova Scotia, by District Health Authority, 2001
(rates standardized to age distribution of 1991 census population of Canada; 3 cases age not specified and not included in calculation)



Herpes simplex II

Two types of Herpes simplex Virus (HSV) usually produce distinct clinical syndromes infecting the genital tract or the oral mucosa. HSVII usually causes genital herpes, occurring primarily in adults and transmitted sexually. Both types I and II, however, may be transmitted by oral-genital, oral-anal, or anal-genital contact. Neonatal infections usually occur via the infected birth canal and less frequently in utero or postpartum.[5]

Incidence of HSVII in Nova Scotia has remained relatively stable over the last ten years with an average annual incidence rate of 50.8 cases per 100,000 population (Figure 22a). In 2002, 99% of cases reported were diagnosed in those over the age of 15 and 79% of all cases reported were diagnosed in women. DHA9 (Capital) had the highest age-standardized incidence of 87.3 cases per 100,000 population (Figure 22b).

Figure 22a. Incidence of Herpes simplex II, Nova Scotia, 1992-2002

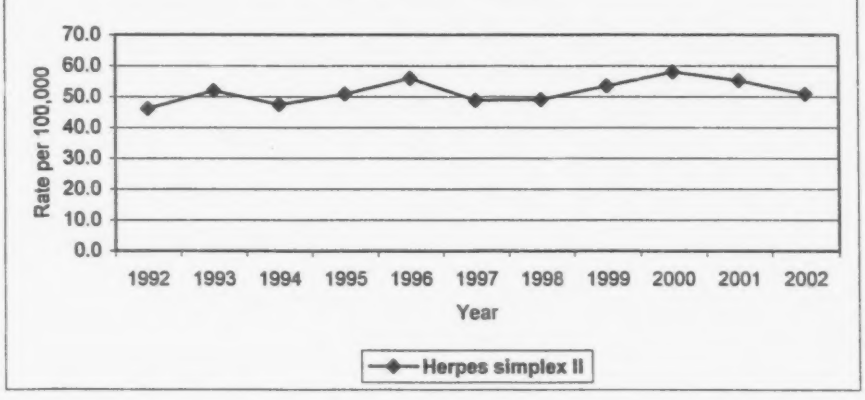
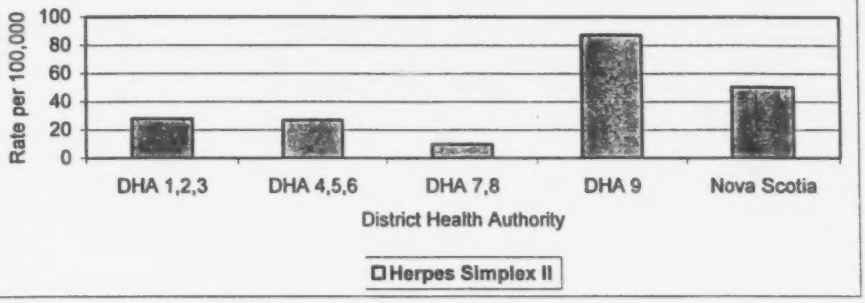


Figure 22b. Age-Standardized Incidence of Herpes simplex II, Nova Scotia, by District Health Authority, 2002

(rates standardized to age distribution of 1991 census population; 3 cases age not specified and not included in calculation)

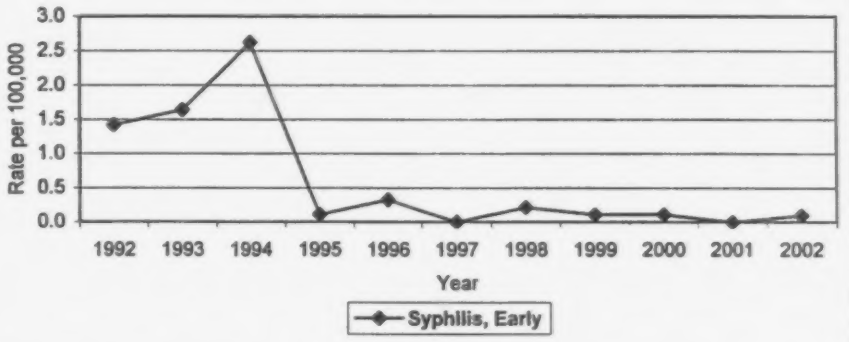


Syphilis

Syphilis is a bacterial disease that may be acute or chronic caused by the bacterium *Treponema pallidum*. It is characterized by a primary lesion, a secondary eruption that involves the skin and mucous membranes, lengthy periods of latency and late lesions of the skin, bone, viscera, central nervous system and cardiovascular system. Syphilis is transmitted sexually, transplacentally from a pregnant infected woman to the fetus and possibly through blood transfusion if the donor is in the early stages of infection.[5]

The incidence of early syphilis between 1992 and 2002 peaked in Nova Scotia in 1994 at 2.6 cases per 100,000 population and has shown a steady decline since that time. There were no cases reported in the province in 2001 (Figure 23a). Similarly, the incidence of "other" syphilis at less than one case per 100,000 between 1997 and 2000, was not reported in 2001 (Figure 23b).

Figure 23a. Incidence of Early Syphilis, Nova Scotia, 1992-2002



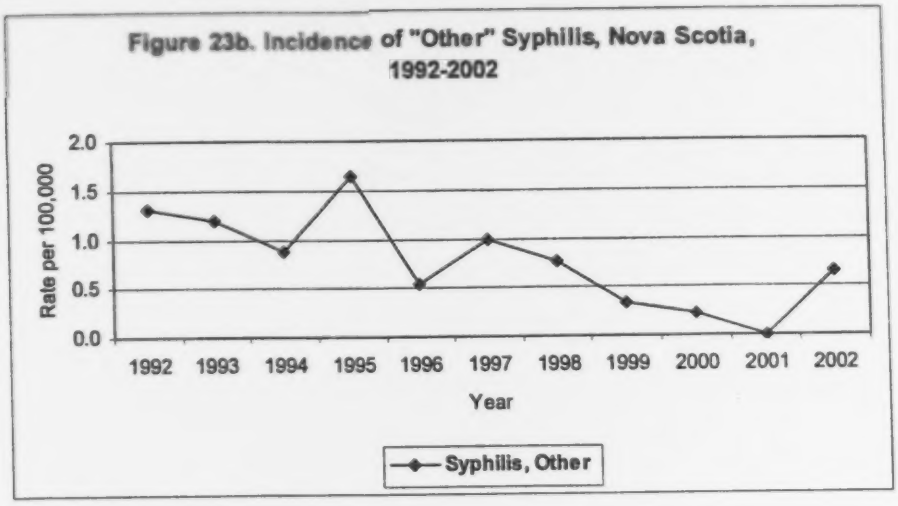


Figure 23b. Incidence of "Other" Syphilis, Nova Scotia, 1992-2002
Rate per 100,000
2.0
1.5
1.0
0.5
0.0
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
Year
Syphilis, Other

Section V

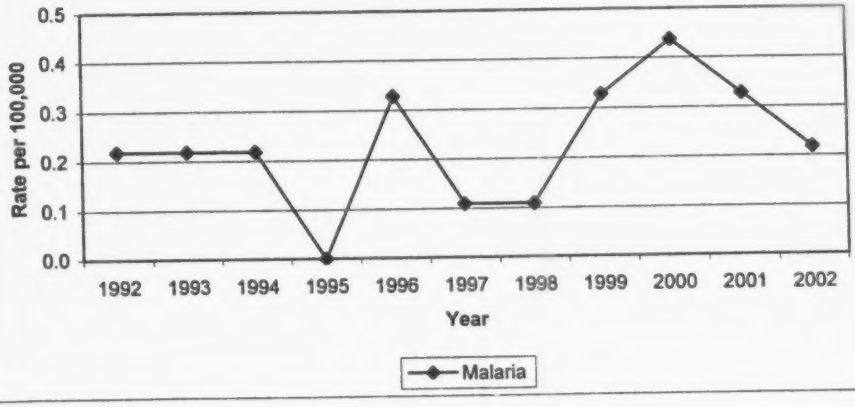
Vectorborne and Other Zoonotic Diseases

Malaria

Malaria is a parasitic disease acquired by infection with four possible human malarial parasites: *Plasmodium vivax*, *P. malariae*, *P. falciparum* and *P. ovale*. While the most serious infection is falciparum malaria, the other malarias are usually not life-threatening. Malaria is a major cause of illness in many tropical and sub-tropical areas and is transmitted by the bite of an infected female *Anopheles* mosquito. Areas of high transmission are found on the edges of forests in South America (e.g. Brazil), southeast Asia (e.g. Thailand and Indonesia) and throughout sub-Saharan Africa. Transfusion of blood from those infected or use of contaminated needles or syringes (injection drug users) may transmit the infection. Although congenital transmission is rare, stillbirth from mothers who have been infected is more common.[5]

Incidence of malaria in Nova Scotia has been exceedingly low with less than one case per 100,000 population between 1992 and 2002. It should be noted that these cases are travel-related (Figure 24).

Figure 24. Incidence of Malaria, Nova Scotia, 1992-2002



Lyme Disease

Lyme disease or Lyme borreliosis is a tickborne zoonotic disease caused by the bacterial spirochete *Borrelia burgdorferi*. It is often characterized by a distinctive skin lesion called "erythema migrans" and systemic symptoms. Neurologic, rheumatologic and cardiac involvement may also be present in varying combinations from months to years.[5]

A deer tick from Antigonish County tested positive for *B. burgdorferi* in the summer of 2002. In the fall of 2002, the first two human cases of endemically acquired Lyme disease were diagnosed in Lunenburg County, Nova Scotia.

West Nile Virus

The West Nile Virus (WNV) is transmitted by mosquitoes that become infected by feeding on the blood of birds carrying the virus. The virus was initially isolated in 1937 in the West Nile province of Uganda and outbreaks have occurred in countries such as Egypt, Israel, South Africa and parts of Asia and Europe. The first North American outbreak occurred in the summer of 1999 in New York City and surrounding area. In Canada, the presence of the virus was first confirmed in September 2001 in birds in Ontario. The first human case was also confirmed in Ontario in September 2002.[7]

In the late summer of 2002, four dead birds collected from different areas of Nova Scotia tested positive for West Nile Virus.

Rabies

Rabies is a neurotropic disease of viral origin that is vaccine-preventable. It presents clinically in humans as furious (agitated) and paralytic (dumb) rabies and is almost invariably fatal. Furious rabies is most common and is associated with hydrophobia and/or aerophobia and usually results in death within a few days of onset of symptoms. The clinical course for paralytic rabies is more protracted and is associated with local paresthesia and progressive flaccid paralysis.[8]

There has been a steady increase in the number of cases of animal rabies in Canada over the last few years with the majority of cases reported from Ontario and Manitoba. Bats, skunks and foxes are the most commonly infected animals.

Despite the large numbers of cases of animal rabies, human rabies is rare in Canada. There have been 22 human deaths due to rabies since reporting was initiated in 1925.[6] No human cases were reported after 1985 until a nine-year old boy from Montreal, Quebec, died from rabies encephalitis in October 2000.[9]

Section VI

Diseases Preventable by Routine Vaccination

Hepatitis B (Acute / Chronic Carrier)

Hepatitis B is an acute or chronic infection caused by the Hepatitis B virus (HBV). Chronic infection is found in 0.5% of North American adults.[5] Risk varies inversely with age following acute infection and risk is also increased in immunocomprimised individuals.[6] HBV may be transmitted sexually, through household contact with an infected individual, perinatally from mother to infant, through injection drug use, and through nosocomial exposure.[5]

The incidence of acute HBV has declined after peaking at 4.5 cases per 100,000 in 1998 to one case per 100,000 in 2002 (Figure 25a). All cases in 2002 were diagnosed in individuals 25 years of age or older. Chronic HBV peaked at 5.5 cases per 100,000 in 1999 and declined to a rate of 2.3 cases per 100,000 by 2002 (Figure 25b).

In some populations, the risk of infection may be reduced by providing HBV vaccine (e.g. health care workers). Publicly funded vaccine programs are now offered in all provinces/territories to provide universal immunization against HBV. The age at which children and adolescents are offered the vaccine varies between jurisdictions.[6]

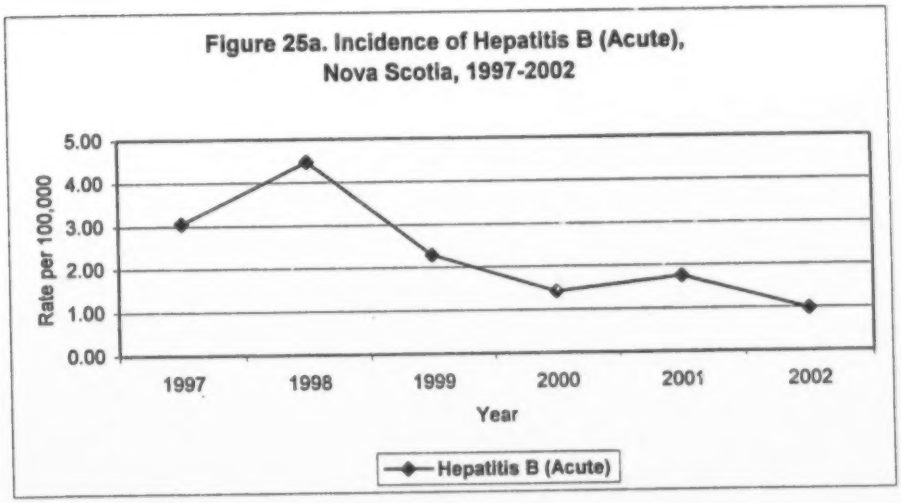
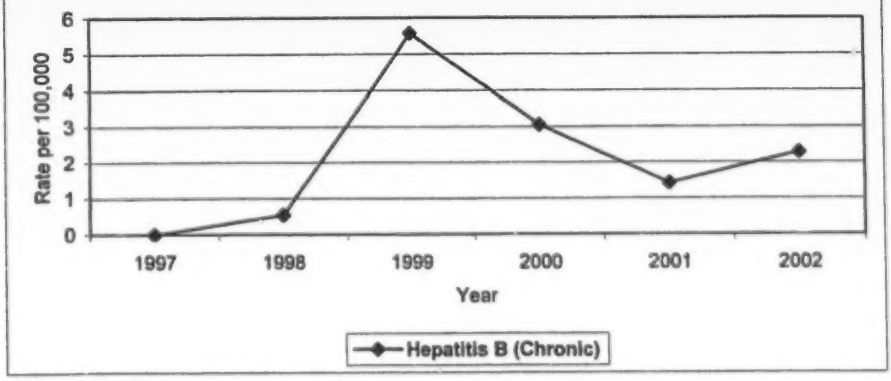


Figure 25b. Incidence of Hepatitis B (Chronic), Nova Scotia, 1997-2002

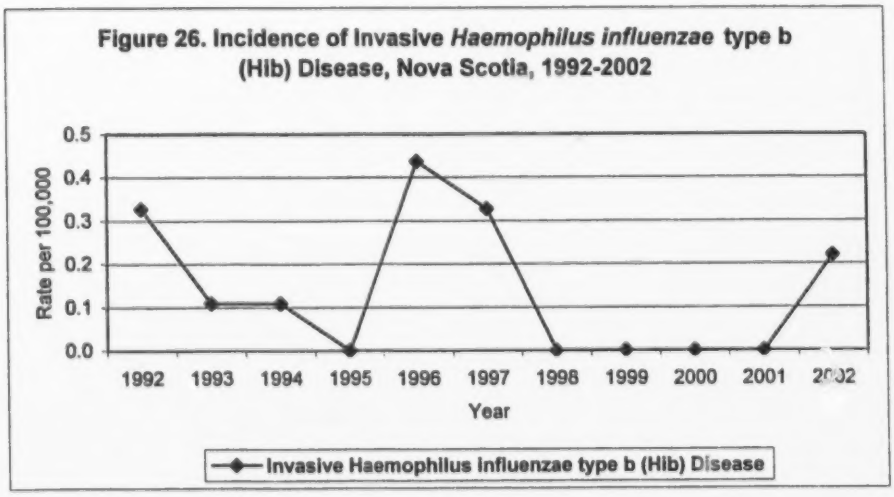


Invasive *Haemophilus Influenzae* Type b (Hib) Disease

Prior to the introduction of Hib vaccines, *Haemophilus influenzae* b was not only the most common cause of bacterial meningitis, but it was also an important cause of other serious invasive infections in young children. Approximately 55% to 65% of those children affected had meningitis and the remainder had epiglottitis, bacteremia, cellulitis, pneumonia or septic arthritis. Otitis media, sinusitis, bronchitis and other respiratory tract disorders also are closely associated with Hib disease. An estimated 2,000 cases of Hib disease occurred annually in Canada prior to the introduction of the Hib conjugate vaccine in 1988. Since that time, the overall incidence of the disease has declined by more than 99%. Most cases now occur in those children who are too old to have undergone primary immunization.[6]

There were no cases of invasive Hib disease reported in Nova Scotia between 1998 and 2001. Since 1992, the rates of disease have been extremely low at less than one case per 100,000 population (Figure 26).

Figure 26. Incidence of Invasive *Haemophilus influenzae* type b (Hib) Disease, Nova Scotia, 1992-2002

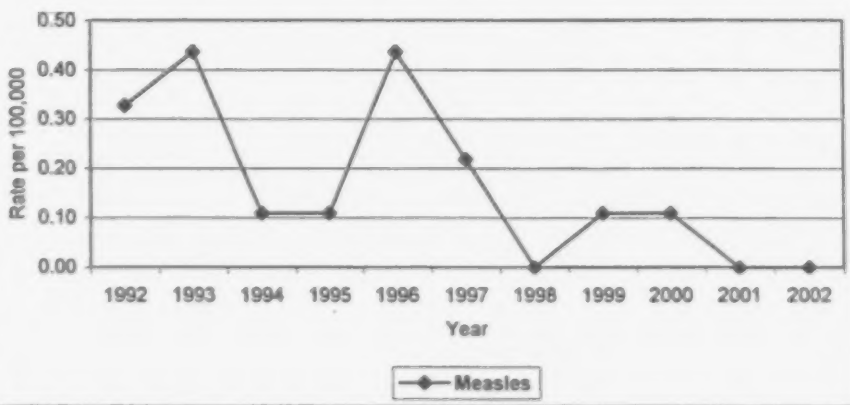


Measles

Measles or rubeola is the most contagious infection in humans that is vaccine preventable. Since the introduction of the vaccine, the incidence of measles has shown a marked decline in Canada and the two-dose schedule of immunization is further decreasing the proportion of children who are susceptible. Prior to the introduction of the vaccine, an estimated 300,000 to 400,000 cases occurred annually and occurrence was cyclical with incidence increasing every two to three years. Immunization for measles in Canada will continue to be necessary until the disease has been eliminated globally.[6]

Incidence of measles in Nova Scotia since 1992 has been very low with less than one case per 100,000 population reported (Figure 27). No cases were reported in 2001 and 2002.

Figure 27. Incidence of Measles, Nova Scotia, 1992-2002

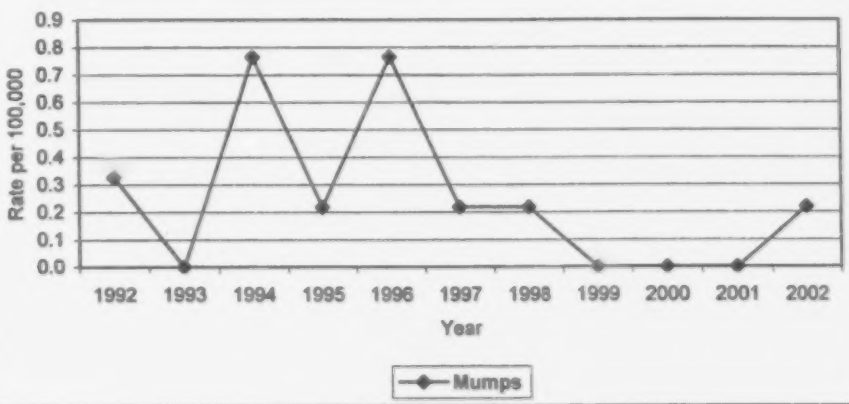


Mumps

Mumps or infectious parotitis is an acute viral disease transmitted through the air, by droplet spread or direct contact with the saliva of an infected individual.[5] Mumps was a major cause of viral meningitis prior to the extensive use of mumps vaccine. Since the vaccine was licensed in 1969, there has been a greater than 99% decrease in the reported number of cases of mumps.[6]

Less than one new case of mumps per 100,000 population was reported between 1992 and 1997 with no cases reported between 1999 and 2001 (Figure 28).

Figure 28. Incidence of Mumps, Nova Scotia, 1992-2002



Pertussis

Pertussis or whooping cough is a very communicable acute bacterial respiratory infection caused by *Bordetella pertussis*. Transmission is commonly by airborne droplet infection usually by direct contact with discharges from respiratory mucous membranes of infected individuals.[5,6] Although any age may be affected, it is most severe among young infants. Reduction of incidence and morbidity of the infection among young children, therefore, is important. Although incidence has declined by more than 90% in Canada, outbreaks still occur.[6]

Following a peak in incidence in 1995 (43 cases per 100,000), the rate of newly diagnosed cases of pertussis has declined dramatically (Figure 29a). In 2002, 87% percent of reported cases were in children 14 years of age and less and the highest age-specific incidence was in children less than one year of age (Figure 29b). The highest age-standardized incidence occurred in DHA9 (Capital Region) (Figure 29c).

Figure 29a. Incidence of Pertussis, Nova Scotia, 1992-2002

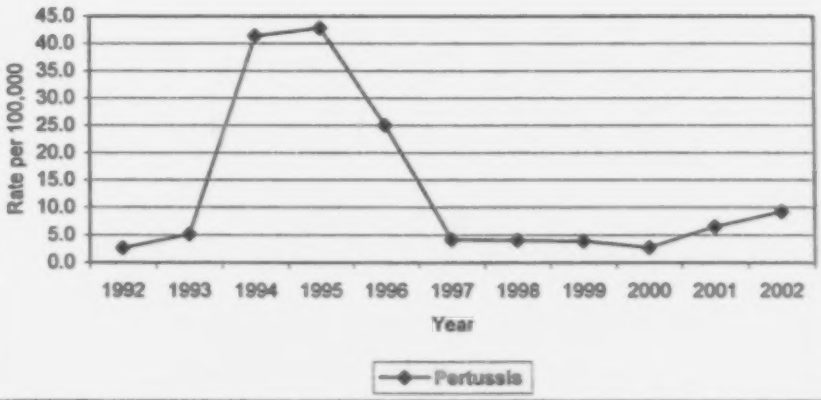


Figure 29b. Age-Specific Incidence of Pertussis, Nova Scotia, 2002

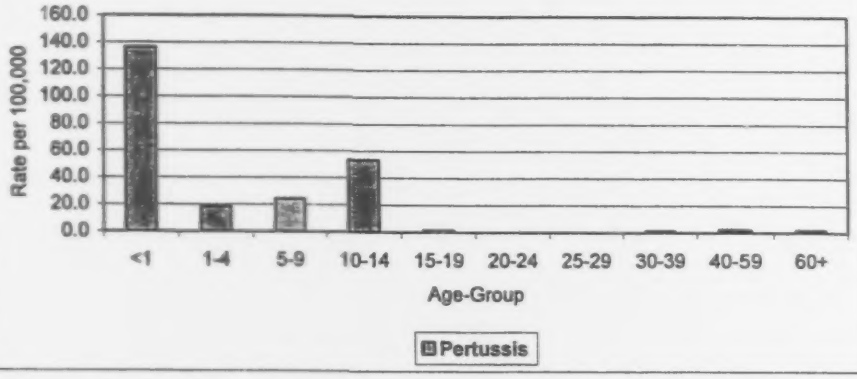
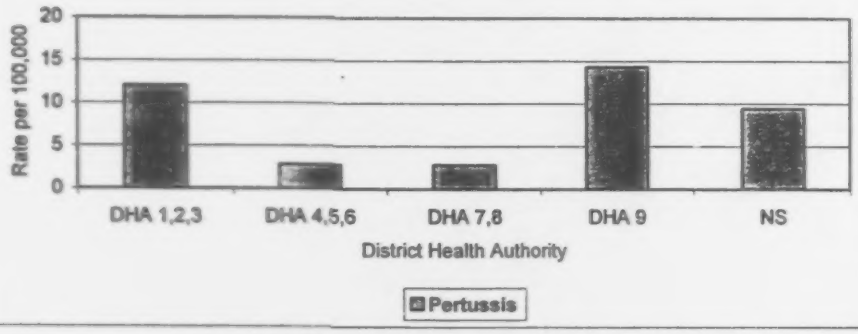


Figure 29c. Age-Standardized Incidence of Pertussis, Nova Scotia, by District Health Authority, 2002
(rates standardized to age distribution of 1991 census population of Canada)

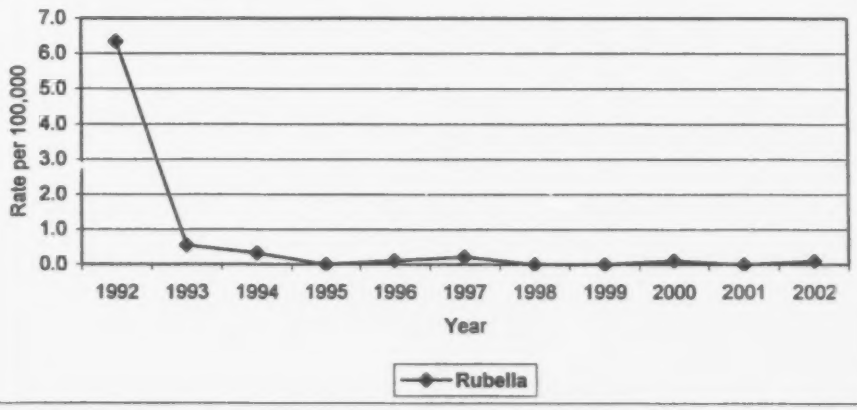


Rubella

Rubella is a viral disease causing a mild, febrile illness. Transmission is through contact with nasopharyngeal secretions, direct contact with infected patients and by droplet spread. An immunization program for measles, mumps and rubella (MMR) directed to infants was introduced in Canada in April, 1983. The main goal of immunization is the prevention of infection in pregnancy and thus prevention of the potential development of congenital rubella syndrome (CRS).[5,6]

The incidence of rubella in Nova Scotia since 1992 has dropped from 6.3 cases per 100,000 population to 0.1 case per 100,000 in 2002 (Figure 30).

Figure 30. Incidence of Rubella, Nova Scotia, 1992-2002

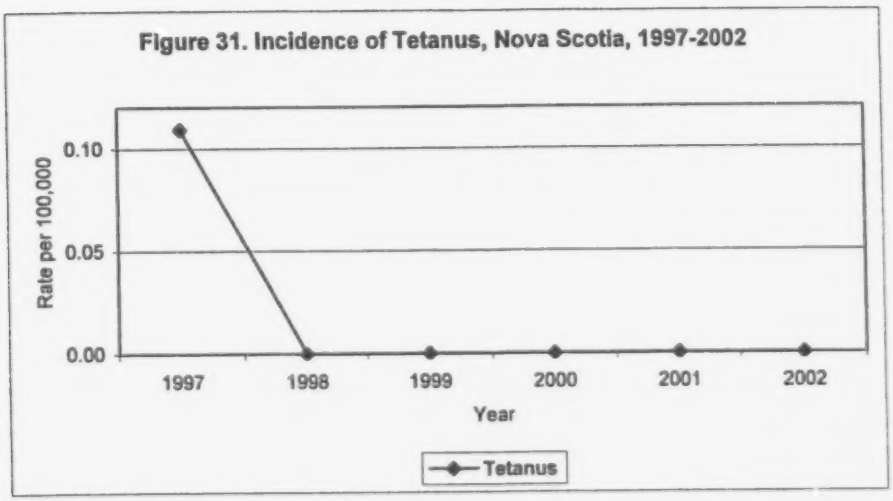


Tetanus

Tetanus is an acute disease caused by an exotoxin produced by the tetanus bacillus, *Clostridium tetani*, that grows at the site of injury in the absence of oxygen. Although it is worldwide in occurrence, it is sporadic and usually uncommon in industrialized countries. The disease is transmitted by spores produced by the bacillus that are introduced into the body commonly through a contaminated puncture wound (e.g. from soil, street dust, animal or human feces), lacerations, burns, seemingly minor wounds or by injection of contaminated street drugs. Growth of the pathogen is favoured by necrotic tissue and/or foreign bodies.[5]

The incidence of tetanus in Nova Scotia has been very low at less than one case per 100,000 population and no cases reported between 1998 and 2002 (Figure 31).

Figure 31. Incidence of Tetanus, Nova Scotia, 1997-2002



Section VII

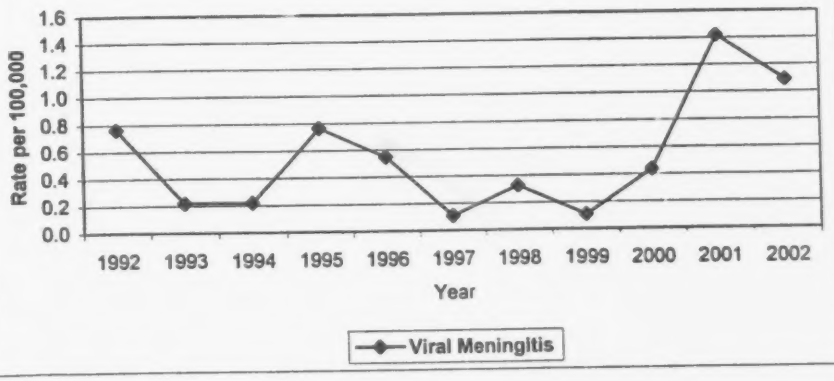
Other Diseases

Viral Meningitis

Viral meningitis is a clinical syndrome with meningeal features caused by a number of viruses. It is comparatively common but seldom with serious consequences, with more than 50% of cases having no demonstrable etiology. In the United States, enteroviruses (picornaviruses) are responsible for the majority of cases of known etiology. Certain types of Coxsackievirus group B and echovirus cause one-third and one-half of cases respectively. The mode of transmission varies with the infectious agent.[5]

Since 1992, the incidence of viral meningitis in Nova Scotia has remained very low at less than one case per 100,000 population with the exception of 2001 when the rate was 1.4 cases per 100,000 (Figure 32).

Figure 32. Incidence of Viral Meningitis, Nova Scotia, 1992-2002

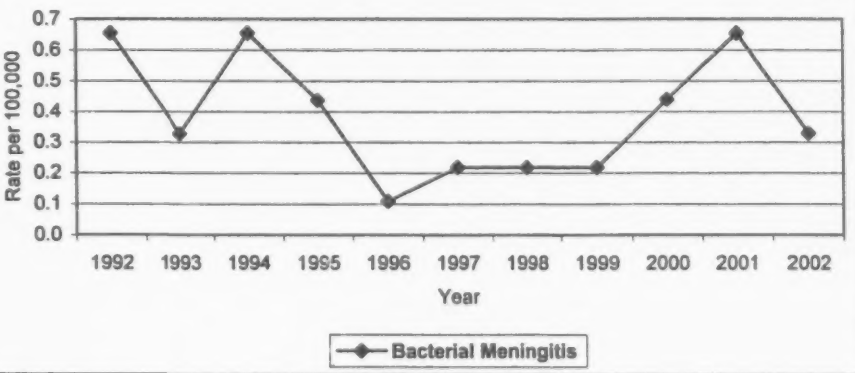


Bacterial Meningitis

The most common agents causing bacterial meningitis as of the late 1990's were *Neisseria meningitidis* and *Streptococcus pneumoniae*. In the United States, *Haemophilus influenzae b* was one of the most common causes of bacterial meningitis but has been essentially eliminated following the introduction of Hib vaccine. Other less common bacteria (staphylococci, enteric bacteria, group B streptococci and listeria) may lead to bacterial meningitis in individuals with particular susceptibilities.[5]

The incidence of bacterial meningitis (caused by other than *N. meningitidis, S. pneumoniae,* and *Haemophilus influenzae* b) has remained consistently low in Nova Scotia since 1992 at less than one case per 100,000 population (Figure 33).

Figure 33. Incidence of Bacterial Meningitis, Nova Scotia, 1992-2002

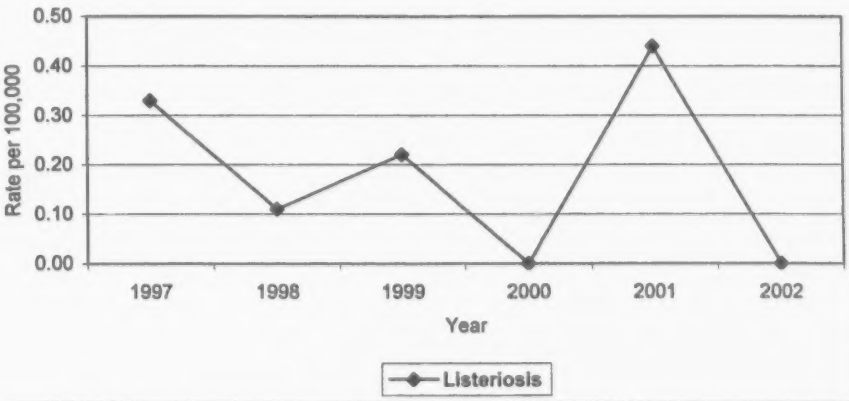


Listeriosis

Listeriosis is a bacterial disease commonly manifested as meningoencephalitis and/or septicaemia in both newborns and adults and as fever and abortion in pregnancy. Transmission is through direct contact with infected material or through neonatal infection where the infection may be passed to the fetus in utero or during birth through the birth canal. Outbreaks have been reported associated with consumption of raw or contaminated milk, soft cheeses, vegetables and pâté.[5]

The incidence of listeriosis in Nova Scotia has remained consistently low since 1997 at less than one case per 100,000 population (Figure 34).

Figure 34. Incidence of Listeriosis, Nova Scotia, 1997-2002



Methicillin-Resistant *Staphylococcus aureus* (MRSA)

Although Methicillin-Resistant *Staphylococcus aureus* was first reported in Canada in 1981, national data on the incidence and epidemiology of the infection is unavailable before 1995. National surveillance for MRSA, initiated in sentinel hospitals, has indicated a significant increase in patients infected or colonized with MRSA over each of the last few years. 4,507 new patients who were infected or colonized with MRSA were identified through surveillance between January 1995 and December 1999. Of these patients, 36% were infected with MRSA. The site of acquisition could be determined for 3,009 cases and of these, 86% were identified as hospital-acquired, 8% were acquired in a long-term care facility and 6% were of community origin. Of the 1,603 infected patients, the most commonly infected sites were skin or soft tissue, pulmonary tissues and surgical sites.[10]

The incidence of MRSA in Nova Scotia has been steadily increasing from a rate of 3.6 cases per 100,000 in 1997 to 21.1 cases per 100,000 in 2002 (Figure 35a). In 2002, DHA9 (Capital) had the highest age-standardized incidence at 33.1 cases per 100,000 population (Figure 35b).

Figure 35a. Incidence of Methicillin-Resistant *Staphylococcus aureus* (MRSA), Nova Scotia, 1992-2002

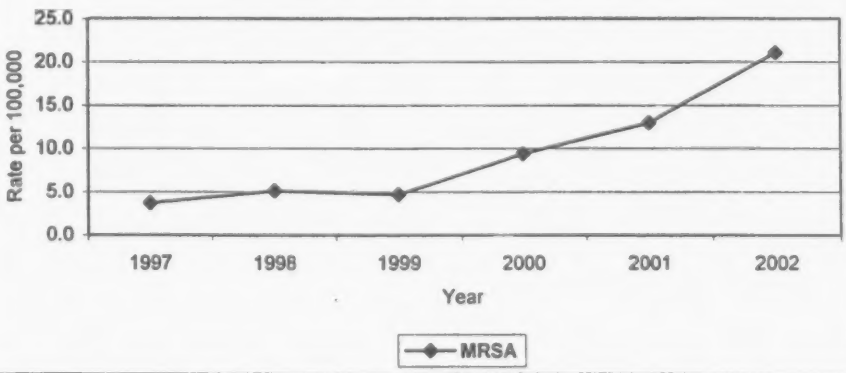
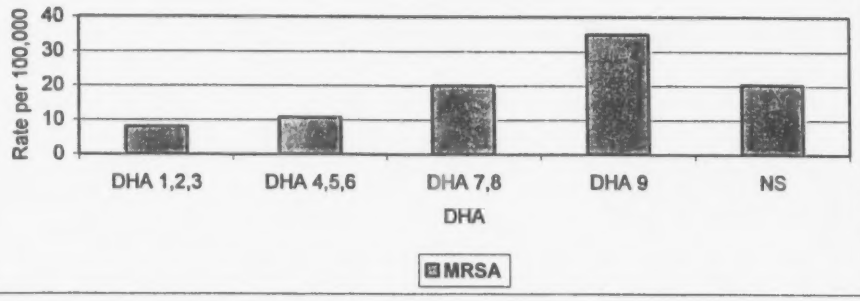


Figure 35b. Age-Standardized Incidence of MRSA, Nova Scotia, by District Health Authority, 2002

(rates standardized to age distribution of 1991 census population of Canada; one case age not specified and not included in calculation)

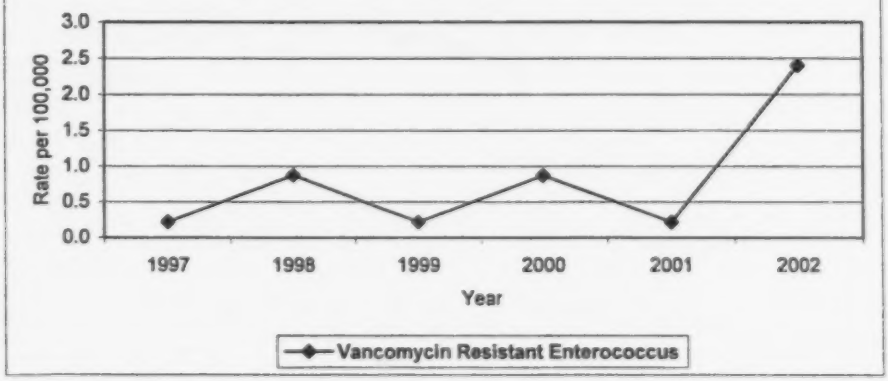


Vancomycin Resistant Enterococcus (VRE)

Enterococcus species are now acknowledged as important nosocomial pathogenic organisms.[11] While recognized as causing endocarditis for nearly a hundred years, they have been recognized recently as a cause of nosocomial infection and "superinfection" in patients who have received antimicrobial agents. In the past 20 years, the emergence of enterococci is, in many ways, attributable to their resistance to a number of commonly used antimicrobial agents (aminoglycosides, aztreonam, cephalosporins, clindamycin, semi-synthetic penicillins nafcillin, oxacillin and trimethoprim-sulfamethoxazole).[12] In 1986, the first report of vancomycin-resistant enterococci (VRE) was made in the United States, almost 30 years following the clinical introduction of vancomycin. This occurrence of VRE was probably prompted by the use of orally administered vancomycin in hospitals in the treatment of antibiotic-associated diarrhea.[9] Of all vancomycin-resistant enterococci recovered in the United States, more than 95% are *E. faecium* and all show resistance to high levels of ampicillin.[13]

The incidence of VRE in Nova Scotia has been consistently low since 1997 at less than one case per 100,000 population reported between 1997 and 2001. Incidence increased in 2002 to approximately 2 cases per 100,000 (Figure 36).

Figure 36. Incidence of Vancomycin Resistant Enterococcus (VRE), Nova Scotia, 1997-2002

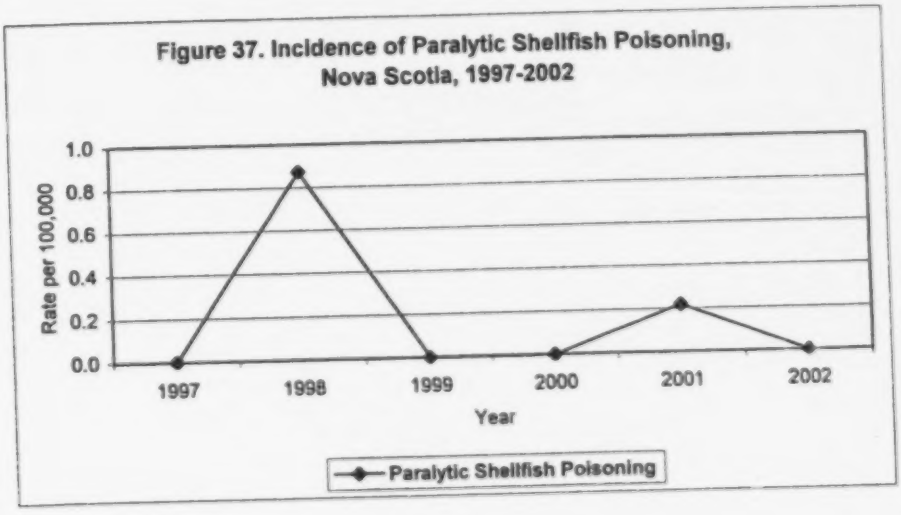


Paralytic Shellfish Poisoning

Paralytic Shellfish Poisoning (PSP) is a syndrome of characteristic symptoms predominantly neurologic in nature caused by saxitoxins present in shellfish. The saxitoxins are produced by *Alexandrium* species as well as other dinoflagellates. The onset of symptoms occurs minutes to hours following the consumption of bivalve molluscs. The toxins become concentrated especially during algae blooms that are termed "red tides" but also occur in the absence of such blooms. Once shellfish become toxic and the bloom subsides, they maintain their toxicity for a number of weeks. In some species, the toxicity is ongoing. While PSP commonly occurs in shellfish harvested from colder waters, it may also occur in tropical waters.[5]

Since 1997, PSP has been reported in Nova Scotia in both 1998 and 2001, although the incidence remains consistently low at less than one case per 100,000 population (Figure 37).

Figure 37. Incidence of Paralytic Shellfish Poisoning, Nova Scotia, 1997-2002



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Appendices

Appendix A:
Summary Tables for Selected Enteric, Food and Waterborne Diseases

Table 1. Reported Number of Cases, Crude and Age-Standardized Rates for Campylobacteriosis by District Health Authority (DHA), Nova Scotia, 2002

	Campylobacteriosis			
DHA	**Number of Reported Cases**	**% of Total for Nova Scotia**	**Crude Rate***	**Age-Standardized Rate****
1,2,3 (Western)	68	33.8	32.3	32.0
4,5,6 (Northern)	34	16.9	22.1	22.0
7,8 (Eastern)	33	16.4	16.9	16.7
9 (Capital)	66	32.8	18.6	18.6
Nova Scotia	201	100	22.0	21.8

*Crude rates based on the 1991 census population of Nova Scotia
**Rates adjusted to the age distribution of the 1991 census population of Canada. One case (Western) age not specified and not included in calculation.

Table 2. Reported Number of Cases, Crude and Age-Standardized Rates for Salmonellosis by District Health Authority (DHA), Nova Scotia, 2002

	Salmonellosis			
DHA	**Number of Reported Cases**	**% of Total for Nova Scotia**	**Crude Rate***	**Age-Standardized Rate****
1,2,3 (Western)	36	25.2	17.1	17.0
4,5,6 (Northern)	22	15.4	14.3	14.5
7,8 (Eastern)	22	15.4	11.3	11.0
9 (Capital)	63	44	17.7	17.4
Nova Scotia	143	100	15.6	15.7

*Crude rates based on the 1991 census population of Nova Scotia
**Rates adjusted to the age distribution of the 1991 census population of Canada

Table 3. Reported Number of Cases, Crude and Age-Standardized Rates for Giardiasis by District Health Authority (DHA), Nova Scotia, 2002

	Giardiasis			
DHA	**Number of Reported Cases**	**% of Total for Nova Scotia**	**Crude Rate***	**Age-Standardized Rate****
1,2,3 (Western)	19	15.6	9.0	8.5
4,5,6 (Northern)	14	11.5	9.1	9.3
7,8 (Eastern)	20	16.4	10.2	9.5
9 (Capital)	69	56.5	19.4	19.3
Nova Scotia	122	100	13.3	13.2

*Crude rates based on the 1991 census population of Nova Scotia

**Rates adjusted to the age distribution of the 1991 census population of Canada. Two cases (Eastern and Western) age not specified and not included in calculation.

Appendix B:
Summary Tables for Selected Sexually Transmitted and Blood Borne Pathogens

HIV/AIDS

Table 1a. Number of new HIV-Positive Test Reports by Year of Test in Nova Scotia to December 31, 2002

Date	Number of HIV-Positive Tests
No date specified	1
1983	1
1984	3
1985	25
1986	40
1987	51
1988	40
1989	34
1990	35
1991	41
1992	38
1993	37
1994	39
1995	36
1996	36
1997	31
1998	31
1999	25
2000	16
2001	12
2002	11
TOTAL	**583**

Table 1b. Number and Percentage of New HIV-Positive Test Reports, by Sex in Nova Scotia to December 31, 2002

	Males		Females	
Year	**N**	**%**	**N**	**%**
Unknown	0	0	1	100
1983	1	100	0	0
1984	3	100	0	0
1985	22	88	3	12
1986	33	82.5	7	17.5
1987	46	90.2	5	9.8
1988	35	87.5	5	12.5
1989	30	88.2	4	11.8
1990	32	91.4	3	8.6
1991	38	92.7	3	7.3
1992	32	84.2	6	15.8
1993	36	97.3	1	2.7
1994	33	84.6	6	15.4
1995	31	86	5	14
1996	32	89	4	11
1997	27	87.1	4	12.9
1998	25	80.6	6	19.4
1999	22	88	3	12
2000	10	62.5	6	37.5
2001	10	83.3	2	16.7
2002	9	81.8	2	18.2
Total	507	87	76	13

Table 1c. Number of New HIV-Positive Test Reports, by Exposure Category and Year of HIV-Positive Diagnosis in Nova Scotia to December 31, 2002

	<1992	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total	
	n	n	n	n	n	n	n	n	n	n	n	n	%	n
MSM	206	23	26	24	20	18	15	14	14	4	4	7	64.3	375
MSM/IDU	8	0	1	0	3	2	1	0	2	1	1	0	3.2	19
IDU	5	4	1	6	4	7	9	10	6	1	2	0	9.4	55
Recipient of Blood	16	1	1	0	0	0	0	0	0	0	0	0	3.1	18
Recipient of Clotting Factor	11	0	0	1	0	0	0	0	0	0	0	0	2.1	12
Heterosexual Contact/Endemic: origin in a Pattern II country	3	4	2	2	4	1	1	1	1	1	1	1	3.8	22
Heterosexual Contact/Endemic: heterosexual contact with person at risk	14	4	5	6	4	3	3	3	1	5	2	1	8.7	51
NIR-Het: no identified risk heterosexual	2	1	1	0	0	4	2	3	0	3	2	1	3.3	19
Peri-Risk	3	0	0	0	0	0	0	0	0	0	0	0	0.5	3
Other	0	0	0	0	0	0	0	0	0	1	0	0	0.2	1
NIR: no identified risk	3	1	0	0	1	1	0	0	1	0	0	1	1.4	8
%	46.5%	6.5%	6.3%	6.7%	6.2%	6.2%	5.3%	5.3%	4.3%	2.7%	2.1%	1.9%	100%	-
Total	271	38	37	39	36	36	31	31	25	16	12	11	-	583

(Percentages are rounded to nearest decimal)

Table 2a. Number of New AIDS Cases by Year of Diagnosis in Nova Scotia to December 31, 2002

Year	Number of AIDS Cases
1983	1
1984	1
1985	3
1986	6
1987	16
1988	14
1989	17
1990	14
1991	20
1992	25
1993	34
1994	37
1995	27
1996	16
1997	10
1998	11
1999	9
2000	7
2001	2
2002	2
TOTAL	**272**

Table 2b. Cumulative number of AIDS cases by sex in Nova Scotia to December 31, 2002

	Males		Females		Total	
Year	N	Cumulative	N	Cumulative	N	Cumulative
1983	1	1	0	0	1	1
1984	1	2	0	0	1	2
1985	3	5	0	0	3	5
1986	6	11	0	0	6	11
1987	14	25	2	2	16	27
1988	13	38	1	3	14	41
1989	14	52	3	6	17	58
1990	13	65	1	7	14	72
1991	19	84	1	8	20	92
1992	23	107	2	10	25	117
1993	31	138	3	13	34	151
1994	35	173	2	15	37	188
1995	25	198	2	17	27	215
1996	15	213	1	18	16	231
1997	10	223	0	18	10	241
1998	11	234	0	18	11	252
1999	9	243	0	18	9	261
2000	6	249	1	19	7	268
2001	2	251	0	19	3	270
2002	2	254	0	19	2	272

Chlamydia Trachomatis (Genital Chlamydia)

Table 3a. Reported Number of New Cases of *Chlamydia trachomatis* by Age, Gender, District Health Authority (DHA) and Province of Nova Scotia, 2002 (N.SP. = not specified; Unkn=unknown)

DHA	Sex	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+	N.SP.	Total
1,2,3 (Western)	F	0	0	0	3	67	65	21	8	2	0	25	191
	M	0	0	0	0	7	15	9	7	2	0	11	51
	Unk	0	0	0	0	0	0	0	0	0	0	2	2
	T	0	0	0	3	74	80	30	15	4	0	38	244
4,5,6 (Northern)	F	0	0	0	0	52	65	18	11	0	1	1	148
	M	0	0	0	0	8	12	6	5	0	0	0	31
	T	0	0	0	0	60	77	24	16	0	1	1	179
7,8 (Eastern)	F	0	0	0	1	64	60	19	8	0	0	0	152
	M	0	0	0	0	11	13	4	1	0	0	2	31
	Unkn	0	0	0	0	0	0	0	0	0	0	1	1
	T	0	0	0	1	75	73	23	9	0	0	3	184
9 (Capital)	F	1	0	0	15	237	324	110	54	7	0	2	750
	M	0	0	0	1	28	86	60	35	6	0	1	217
	T	1	0	0	16	265	410	170	89	13	0	3	967
Nova Scotia	F	1	0	0	19	420	514	168	81	9	1	28	1241
	M	0	0	0	1	54	126	79	48	8	0	14	330
	Unkn	0	0	0	0	0	0	0	0	0	0	3	3
	Total	1	0	0	20	474	640	247	129	17	1	45	1574

Table 3b. Age and Sex-Specific, Crude and Age-Standardized Rates* of *Chlamydia trachomatis* by District Health Authority (DHA) and Nova Scotia, 2002 (NA = not applicable; N.SP. = not specified; Unkn=unknown)

*Rates adjusted to the age distribution of the 1991 census population of Canada. 45 cases age not specified and not included in calculation of provincial and DHA (Regional) age-standardized rates (Western: 38, Northern: 1, Eastern: 3, Capital: 3)

DHA	Sex	<1	1-4	5-9	10-14	15-19	20-24	25-29	30- 39	40-59	60+	NSP	Crude Rate	Age-Standardized Rate
1,2,3 (Western)	F	0	0	0	44.0	916.7	927.1	249.6	47.5	8.5	0	NA	181.2	162.9
	M	0	0	0	0	87.7	191.0	101.2	40.9	8.4	0	NA	48.6	39.3
	T	0	0	0	21.6	484.0	538.2	173.4	44.2	8.5	0	NA	116.0	100.1
4,5,6 (Northern)	F	0	0	0	0	889.0	1267.3	303.9	88.6	0	6.2	NA	189.8	194.0
	M	0	0	0	0	130.1	218.7	100.4	40.5	0	0	NA	40.8	35.2
	T	0	0	0	0	500.0	725.3	201.7	64.6	0	3.5	NA	117.0	112.7
7,8 (Eastern)	F	0	0	0	13.2	797.9	934.7	273.3	52.4	0	0	NA	153.6	154.6
	M	0	0	0	0	127.1	179.7	58.9	6.8	0	0	NA	32.1	29.4
	T	0	0	0	6.6	449.7	534.6	167.4	29.9	0	0	NA	94.1	86.2
9 (Capital)	F	39.1	0	0	139.8	2039.4	2050.6	589.4	161.0	17.6	0	NA	413.8	377.2
	M	0	0	0	9.0	228.6	566.7	315.1	108.1	15.3	0	NA	124.7	111.8
	Total	19.1	0	0	73.2	1110.1	1323.6	450.9	135.0	16.4	0	NA	272.1	248.0
	Age Unkn	-	-	-	-	-	-	-	-	-	-	NA	-	-
Nova Scotia	F	16.5	0	0	62.3	1280.5	1496.0	420.5	103.8	8.8	1.2	NA	267.7	254.7
	M	0	0	0	3.2	154.1	352.4	194.1	62.7	7.8	0	NA	73.1	68.8
	Unkn	0	0	0	0	0	0	0	0	0	0	NA	-	-
	Total	8.0	0	0	32.3	698.7	912.8	306.3	83.4	8.3	0.7	NA	172.0	179.2

Glossary of Terms [1]

MSM	Men who have had sex with men, including men reporting either homosexual or bisexual contact.
MSM/IDU	Men who have had sex with men and have injected drugs.
IDU	Injecting drug use
Blood/Blood Products	Prior to 1998, a combined exposure category. Since 1998, separated into: recipient of blood; recipient of clotting factor.
Heterosexual Contact/Endemic	Prior to 1998, a combined exposure category. Since 1998, separated into: endemic and heterosexual contact. Endemic: persons born in a pattern II country (i.e. country in which predominant means of HIV transmission is heterosexual contact). Heterosexual Contact: persons reporting heterosexual contact with person either HIV-infected or at increased risk for HIV infection (i.e. injecting drug user, bisexual male, from endemic country).
NIR-HET	No Identified Risk-Heterosexual (NIR-HET): Classification for case if heterosexual contact is only risk factor reported and nothing known about mode of exposure for heterosexual partner.
Occupational Exposure	Exposure to HIV-contaminated blood, body fluids or concentrated virus in occupational setting.
NIR (No Identified Risk)	History of exposure to HIV through any of modes listed is unknown or no reported history.
Other	Mode of HIV transmission known but cannot be classified among major exposure categories.

1

Division of HIV/AIDS Epidemiology and Surveillance, Bureau of HIV/AIDS, STD and TB, Population and Public Health Branch, Health Canada. HIV and AIDS in Canada Surveillance Report to December 31,2000. April,2001. Minister of Public Works and Government Services Canada, 2001.

Gonorrhea

Table 4a. Reported Number of Cases of Gonorrhea by Age-Group and Sex, Nova Scotia, 2002

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+	Age Not Specified	Total
Female	0	1	0	3	41	43	14	3	2	0	0	107
Male	0	0	0	0	12	33	18	20	9	0	0	92
Total	0	1	0	3	53	76	32	23	11	0	0	199

Table 4b. Reported Number of Cases, Crude and Age-Standardized Rates for Gonorrhea by District Health Authority (DHA), Nova Scotia, 2002

DHA	Number of Reported Cases	% of Total for Nova Scotia	Crude Rate *	Age-Standardized Rate **
1, 2, 3 (Western)	9	4.5	4.3	4.0
4, 5, 6 (Northern)	10	5	6.5	6.8
7, 8 (Eastern)	2	1.0	1.0	1.0
9 (Capital)	178	89.4	50.1	45.4
Nova Scotia	199	100	21.7	21.3

*Crude rates based on 1991 census population of Nova Scotia
**Rates adjusted to the age distribution of the 1991 census population of Canada

Hepatitis C

Table 5a. Reported Number of Cases of Hepatitis C by Age-Group and Gender, Nova Scotia, 2001

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+	Age Not Specified	Total
F	0	0	0	0	0	3	9	16	23	4	0	55
M	0	0	0	0	0	13	8	28	84	4	0	137
Unknown	0	0	0	0	0	0	0	0	0	1	2	3
Total	0	0	0	0	0	16	17	44	107	9	2	195

Table 5b. Reported Number of Cases, Crude and Age-Standardized Rates for Hepatitis C by District Health Authority (DHA), Nova Scotia, 2001

	Hepatitis C			
DHA	Number of Reported Cases	% of Total for Nova Scotia	Crude Rate*	Age-Standardized Rate**
1, 2, 3 (Western)	12	6.2	5.7	6.0
4, 5, 6 (Northern)	41	21	26.6	26.7
7, 8 (Eastern)	37	19	18.9	20.0
9 (Capital)	105	53.8	29.5	29.0
Nova Scotia	195	100	21.3	21.4

*Crude rates based on 1991 census population of Nova Scotia

**Rates adjusted to the age distribution of the 1991 census population of Canada. Three cases age not specified (Western: 1, Capital: 2).

Herpes simplex

Table 6a. Reported Number of Cases of Herpes simplex II by Age-Group and Sex, Nova Scotia, 2002

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60 +	Age Not Specified	Total
F	0	0	1	2	42	102	62	84	62	11	1	367
M	0	0	1	0	6	21	18	24	19	7	1	97
Unk	0	0	0	0	0	0	0	1	0	0	1	2
Total	0	0	2	2	48	123	80	109	81	18	3	466

Table 6b. Reported Number of Cases, Crude and Age-Standardized Rates for Herpes simplex II by District Health Authority (DHA), Nova Scotia, 2002

	Herpes simplex			
DHA	Number of Reported Cases	% of Total for Nova Scotia	Crude Rate*	Age-Standardized Rate**
1,2,3 (Western)	60	12.9	28.5	27.9
4,5,6 (Northern)	44	9.4	28.6	26.9
7,8 (Eastern)	27	5.8	13.8	14.6
9 (Capital)	335	71.9	94.3	87.3
Nova Scotia	466	100	50.9	50.5

*Crude rates based on 1991 census population of Nova Scotia.

**Rates adjusted to the age distribution 1991census population of Canada. Three cases age not specified (Capital: 1, Western: 2) and not included in calculation.

Appendix C:
Summary Tables for Selected Other Diseases

Table 1a. Reported Number of Cases of Methicillin-Resistant *Staphylococcus aureus* (MRSA) by Age-Group and Gender, Nova Scotia, 2002

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+	Age not specifed	Total
F	0	0	0	0	0	0	2	0	11	84	1	98
M	0	1	0	0	1	1	1	5	18	68	0	95
Total	0	1	0	0	1	1	3	5	29	152	1	193

Table 1b. Reported Number of Cases, Crude and Age-Standardized Rates for Methicillin-Resistant *Staphylococcus aureus* (MRSA), Nova Scotia, by District Health Authority, 2002

	MRSA			
DHA	Number of Reported Cases	% of Total for Nova Scotia	Crude Rate*	Age-Standardized Rate**
1,2,3 (Western)	19	9.8	9.0	8.0
4,5,6 (Northern)	19	9.8	12.3	10.6
7,8 (Eastern)	45	23.3	23.0	20.0
9 (Capital)	110	57.0	31.0	33.1
Nova Scotia	193	100	21.1	20.3

*Crude rates based on 1991 census population of Nova Scotia.

**Rates adjusted to the 1991 census population of Canada. One case age not specified (Eastern) and not included in calculation.